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Revision of the *Anthonomus* Subgenus *Anthonomocyllus*  
Dietz (Coleoptera: Curculionidae)

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ABSTRACT

The seventeen species of *Anthonomus* Germar in the subgenus *Anthonomocyllus* Dietz include *Anthonomus tenuirostris* Champion (= *A. filirostris* Champion, new synonymy), *A. argentatus* Gyllenhal, *A. costulatus* Suffrian (= *A. elegans* LeConte), *A. contaminatus* Boheman, *A. dentipes* Hustache (= *A. murinofasciatus* Voss, new synonymy), *A. xanthoxyli* Linell, *A. leucostictus* Dietz, *A. aeroides* Champion, *A. caeruleisquamis* Champion, and eight new species: *A. acus*, *A. accola*, *A. azalus*, *A. guanita*, *A. pazmani*, *A. aeroides*, *A. cymatilis* and *A. caesius*. The species occur in the Southern United States, México, Central and South America and in the West Indies. Some are known to be associated with plants in the genus *Zanthoxylum* (Rutaceae). Lectotypes are designated for *A. tenuirostris*, *A. filirostris*, and *A. dentipes*, and a neotype is designated for *A. murinofasciatus*. Characters of the subgenus and of the species groups and included species are described and illustrated and a key to adults of the species is presented. The phylogenetic relationships of the species are reconstructed on the basis of apomorphic characters of adults.

INTRODUCTION

*Anthonomocyllus* was established by Dietz (1891) as a subgenus of the genus *Anthonomus* Germar to include *A. elegans* LeConte from Florida, *A. leucostictus* Dietz and *A. pusillus* LeConte (= *A. hamiltoni* Dietz) from Texas. Later, *A. xanthoxyli* Linell from Texas, *A. atomarius* Blatchley from New Jersey, and *A. murinofasciatus* Voss from Brazil were added (Linell 1897, Blatchley and Leng 1916, Voss 1944). Burke (1968) and Ahmad and Burke (1972) noted that the subgenus thus constituted contained disparate elements, suggesting the need for a revision. Seventeen New World species of *Anthonomus*, eight of them new, are herein assigned to *Anthonomocyllus*. Descriptions, illustrations and keys are presented in this paper to facilitate identification of the species.

MATERIALS AND METHODS

Specimens of 485 adults, including the types of most of the previously described species, were examined. These were borrowed from the collections of the following individuals and institutions (letter codens identify the collections in the text):

- AMNH The American Museum of Natural History, New York, New York, USA, L. H. Herman, Jr.;
- AUEM Auburn University Entomological Collections, Auburn, Alabama, USA, W. E. Clark;
- BMNH The British Museum (Natural History), London, England, R. T. Thompson;

- CMFP M. Ferragu Collection, Paris, France;  
 CNCI Canadian National Collection of Insects and Arachnids, Ottawa, Canada, D. E. Bright;  
 CWOB Collection of C. W. O'Brien, Tallahassee, Florida, USA;  
 DEIC Deutsches Entomologisches Institut, Eberswalde, DDR, L. Dieckmann;  
 DZUP Universidade Federal do Paraná, Curitiba, Brazil, G. H. Rosado-Neto;  
 FSCA Florida State Collection of Arthropods, Gainesville, Florida, USA, R. E. Woodruff;  
 HAHC H. and A Howden Collection, Ottawa, Ontario, Canada;  
 IZAV Universidad Central de Venezuela, Maracay, Venezuela, L. J. Joly;  
 MCZC Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts, USA, S. R. Shaw;  
 MHND Museo Nacional de la Historia Natural, Santo Domingo, Republica Dominicana; A Zaglul;  
 MNHN Muséum National d'Histoire Naturelle, Paris, France, H. Perrin;  
 MPEG Museu Paraense Emilio Goeldi, Belém, Pará, Brazil, W. L. Overal;  
 MZSP Museu de Zoologia, Universidade de São Paulo, São Paulo, Brazil, U. R. Martins;  
 NHRS Naturhistoriska Riksmuseum, Stockholm, Sweden, P. I. Persson;  
 RSAC Robert S. Anderson Collection, College Station, Texas, USA;  
 TAMU Texas A&M University, College Station, Texas, USA, H. R. Burke;  
 USNM National Museum of Natural History, Washington, D. C., USA, D. R. Whitehead.  
 ZMHB Museum für Naturkunde der Humboldt-Universität, Berlin, DDR, F. Hieke.

Measurements were made with an ocular micrometer in a dissecting microscope as follows: total body length from anterior margin of eye to elytral apex in lateral view; width across elytra at widest point; length of pronotum from anterior to posterior margins; length of rostrum from anteroventral margin of eye to apex, across arc, in lateral view; length of distal portion of rostrum from antennal insertion to apex in lateral view; width of frons at narrowest point between eyes; width of base of rostrum just distad of eyes in dorsal view; and width of pro- and metafemora, in anterior view, excluding inner marginal teeth. The range and, in parentheses, the mean and sample size of each measurement, are given for each species.

### Subgenus *Anthonomocyllus* Dietz

*Anthonomocyllus* Dietz 1891: 191. Type species, *Anthonomus costulatus* Suffrian (= *A. elegans* LeConte), by original designation). Blatchley and Leng 1916: 287. Schenkling and Marshall 1934: 38. Voss 1944: 47-48. O'Brien and Wibmer 1982: 105. Wibmer and O'Brien 1986: 203.

*Recognition.*— The composition of the subgenus *Anthonomocyllus* is defended on the basis of hypotheses of phylogenetic relationships presented in the phylogeny section. Monophyly of the subgenus is indicated by a single apomorphic character shared by adults of most of the species:

Mesocoxae widely separated from each other by distance *ca.* 0.50 times wider than the diameter of a mesocoxa or more.

The mesocoxae are more narrowly separated in a monophyletic group composed of *A. tenuirostris*, *A. acus* and *A. accola*. The protibia in these three species is like that in species assigned to the *A. tenuirostris* group that have



widely separated mesocoxae in having a slender, acute median tooth on the inner margin tooth (Figs. 53-59). The pronotum is flattened in the latter two species (Figs. 4, 6), as in the other species assigned to the *A. tenuirostris* group, and like those species it has a large dorsal macula of imbricated, pallid scales on the anterior and median portions of the dorsum (Figs. 8, 12, 14, 16, 18).

*Included species.*— The seventeen species of *Anthonomocyllus* are placed in three species groups.

*A. tenuirostris* Species Group

- A. tenuirostris* Champion (Guatemala, México)
- A. acus*, new species (Bolivia, Brazil, México)
- A. accola*, new species (Venezuela)
- A. argentatus* Gyllenhal (Cuba, Jamaica, Hispaniola, Puerto Rico, St. Barthélemy, Trinidad, Venezuela)
- A. costulatus* Suffrian (= *A. elegans* LeConte) (Bahamas, Cuba, Florida)
- A. azalus*, new species (México)
- A. contaminatus* Boheman (Colombia, Venezuela)
- A. dentipes* Hustache (= *A. murinofasciatus* Voss) (Argentina, Brazil)
- A. guanita*, new species (Antigua, Guadeloupe, Hispaniola)
- A. pazmani*, new species (México)
- A. xanthoxyli* Linell (México, Texas)

*A. leucostictus* Species Group

- A. leucostictus* Dietz (= *A. albopictus* Champion) (México, Texas)

*A. caeruleisquamis* Species Group

- A. squamiger* Champion (Panamá, Venezuela)
- A. caeruleisquamis* Champion (Guatemala)
- A. aeroides* new species (Colombia, Venezuela)
- A. cymatilis*, new species (Brazil)
- A. caesius*, new species (Brazil)

Some species previously in *Anthonomocyllus* are excluded. The mesocoxae of *A. pusillus* LeConte (= *A. hamiltoni* Dietz) from Texas are not widely separated, and as Burke (1968) and Ahmad and Burke (1972) stated, the species is "obviously not very closely related" to the type species of *Anthonomocyllus*. Blatchley and Leng (1916: 290) placed *A. atomarius* Blatchley from New Jersey in *Anthonomocyllus*. No specimens of *A. atomarius* were examined, but Burke (pers. comm.) stated that the species is more closely related to *A. pusillus* than to any of the species of *Anthonomocyllus*. These two species may now properly be considered to belong to the subgenus *Anthonomus*.

*Natural History.*— *Anthonomocyllus* adults have been collected on the following plants:

Euphorbiaceae

*Alchornea sidaefolia* Baill.

*A. acus*

Rubiaceae

*Faramea occidentalis* A. Rich.

*A. argentatus*

Rutaceae

*Zanthoxylum fagara* (L.) Sarg.

*A. leucostictus*

*A. xanthoxyli*

*Zanthoxylum spinifex* D.C.

*A. guanita*

*Zanthoxylum* sp.*A. contaminatus**A. tenuirostris*

"rutaceous shrub"

*A. azalus*

The *Zanthoxylum* records probably represent true hosts, *i.e.*, plants on which the larvae develop. Linell (1897: 49-50) noted that the types of *A. xanthoxyli* were found "living in the seeds" of *Z. fagara*, while Burke and Gates (1974: 325-326) noted that adults of that species have been collected along with those of *A. leucostictus* on *Zanthoxylum* plants. Townsend (1903) stated that larvae of both *A. xanthoxyli* and *A. leucostictus* develop in the fruit of *Z. fagara*.

The Euphorbiaceae and Rubiaceae records probably represent spurious occurrences. Anthonomine weevils are monophagous or oligophagous at the species level and several natural groups of species have relatively narrow host ranges (Burke 1976, Clark 1987a,b, 1988a,b,c,d, Clark and Burke 1985, 1986a,b, 1989). Thus, it seems likely that other species of *Anthonomocyllus* have species of Rutaceae, perhaps *Zanthoxylum*, as hosts. The species known to be associated with *Zanthoxylum* represent two of the three *Anthonomocyllus* species groups, but hosts of the species in the third species group, the *A. caeruleisquamis* group, are unknown.

**Key to the *Anthonomocyllus* Species Groups**

- 1 Mesotibia with outer apical angle rounded or angulate but not drawn out into an acute spine; femoral tooth short, acute or blunt (Figs. 53) .....*A. tenuirostris* group, p. 562
- 1' Mesotibia with acute outer apical spine (Fig. 67); femoral tooth (Fig. 67) long, slender, slightly curved, acute .....2
- 2 Pronotal punctures separated by carinate interspaces, most with a narrow, fuscous scale, a few with broad, leucine scales; elytra with integument broadly visible between scattered leucine scales and inconspicuous, narrow, pallid fuliginous scales (Figs. 19, 20); elytral interstriae slightly convex, 3rd slightly elevated at base .....*A. leucostictus* group, p. 577
- 2' Pronotal punctures separated by flat interspaces, most with a large scale that does not extend beyond edge of puncture, a few with much narrower scales (Figs. 22-26); elytra with integument narrowly visible between small, rounded, cinereous to caeruleous scales; elytral interstriae flat, 3rd not elevated at base .....*A. caeruleisquamis* group, p. 578

**The *Anthonomus tenuirostris* Species Group**

*Recognition* (Figs. 1-18).— The pronotum has a large dorsal macula of broad, pallid scales that are replaced by dark, narrow scales on the posterolateral portions in adults of most of the species (Figs. 4, 6, 8, 10, 12), although this is not evident in *A. tenuirostris* (Fig. 2). The pronotum is flattened on the disc, especially in *A. accola* (Fig. 6) and *A. argentatus* (Fig. 8), but it is much less flattened in *A. acus* and is strongly rounded in *A. tenuirostris*. The inner margin of the protibia has a slender, acute, median tooth in *A. tenuirostris* (Fig. 53), *A. accola* (Fig. 54) and *A. argentatus* (Fig. 55). This is not evident in adults of the

other members of the group which have a broad, blunt, median prominence on the inner protibial margin (Figs. 56-59).

### Key to the Species in the *A. tenuirostris* Species Group

- 1 Mesocoxae narrowly separated by distance *ca.* 0.3-0.4 x width of a mesocoxa; pygidium of female with short, carinate, apicodorsal prominence (Figs. 30-32); abdominal sternum 5 of female with posteromarginal "clasp" that receives apicomedian prominence of pygidium (Figs. 44, 45) .....2
- 1' Mesocoxae widely separated by distance *ca.* 0.5-0.8 x width of a mesocoxa; pygidium of female with dorsal, apicolateral extensions, apicodorsal excavation and middorsal concavity or channel (Figs. 33-39); abdominal sternum 5 of female straight (Fig. 46) or emarginate (Figs. 47-49), without posteromarginal "clasp".....4
- 2 (1) Pronotum flattened dorsally; metatibia with large inner marginal prominence (Fig. 61); mesosternum carinate between mesocoxae; endophallic sclerites large (Fig. 72); rostrum of female curved (Fig. 5).....*A. accola*, p. 567
- 2' Pronotum rounded dorsally; metatibia without inner marginal prominence; mesosternum not carinate between mesocoxae; endophallic sclerites small (Fig. 70, 71); rostrum of female straight, slender (Fig. 1).....3
- 3 (2') Eyes protruding (Fig. 3); protibia straight on outer margin, not widened medially, inner marginal tooth blunt; pronotum with broad, pallid scales in large fascia covering all but posterolateral portions (Fig. 4).....*A. acus*, p. 566
- 3' Eyes not protruding (Fig. 1); protibia strongly curved on outer margin, widened medially to short, acute, inner marginal tooth (Fig. 53); scales on posterolateral portions of pronotum not strongly differentiated from those on other portions (Fig. 2).....*A. tenuirostris*, p. 564
- 4 (1') Sutural elytral interstriae without postscutellar patch of broad, pallid scales (Fig. 8); odd-numbered elytral interstriae slightly elevated; median inner marginal protibial prominence long, slender, acute (Fig. 55); abdominal sternum 5 of female without anteromedian fovea (Fig. 46) .....  
.....*A. argentatus*, p. 568
- 4' Sutural elytral interstriae with postscutellar patch of broad, pallid scales (Fig. 10); odd-numbered elytral interstriae not elevated; median inner marginal protibial prominence short, stout (Figs. 56-59); abdominal sternum 5 of female with anteromedian fovea (Figs. 47-49) .....5
- 5 (4') Femora with long scales on inner margin that exceed ventral tooth (Figs. 56, 63); metatibia of male (Fig. 63) strongly excavated between inner marginal prominence, emarginate apicodorsally; pygidium of female with large apicodorsal excavation and broad, thin, apicolateral extensions (Fig. 34) .....  
.....*A. costulatus*, p. 569
- 5' Femora with short scales on inner margin that do not exceed inner marginal tooth (Figs. 57-59, 64, 65); metatibia of male

- weakly excavated (Fig. 65) or not excavated (Figs. 64, 66) between inner marginal prominence, not emarginate apicodorsally; pygidium of female without large apicodorsal excavation, apicolateral extensions stouter (Figs. 35-38) or minute (Fig. 39).....6
- 6 (5') Femora short, stout, *ca.* 3.1 x longer than wide (Figs. 58, 65); pygidium of female with broad dorsal excavation (Fig. 38); aedeagus with long, slender, apical extension (Fig. 78).....*A. guanita*, p. 574
- 6' Femora longer, more slender; pygidium of female with narrower dorsal excavation (Figs. 35-37); aedeagus without slender apical extension.....7
- 7 (6') Metatibia of male with slight inner marginal prominence (Fig. 64).....8
- 7' Metatibia of male without inner marginal prominence (Fig. 66).....9
- 8 (7) Aedeagus symmetrical, not strongly expanded at apex (Fig. 88); adults 2.64-2.80 mm in length.....*A. dentipes*, p. 573
- 8' Aedeagus asymmetrical, strongly expanded at apex (Fig. 79); adult larger, 3.12 mm in length.....*A. pazmani*, p. 575
- 9 (7') Protibia without preapical tooth (Fig. 59); aedeagus strongly asymmetrical, with apicodorsal carinae that converge apically to apicomedian prominences (Fig. 80); abdominal sternum 5 of female with u-shaped posteromedian emargination (Fig. 49); dorsolateral carinae of female pygidium extended posteriorly as slight, narrowly separated apicolateral prominences (Fig. 39).....*A. xanthoxyli*, p. 576
- 9' Protibia with well-developed preapical tooth; aedeagus symmetrical (Fig. 75) or only slightly asymmetrical (Fig. 76), without apicodorsal carinae; abdominal sternum 5 of female without posteromedian emargination (Fig. 47); dorsolateral carinae of female pygidium extended posteriorly as thick, apicolateral prominences (Figs. 35, 36).....10
- 10 (9') Aedeagus symmetrical, subapicolateral expansions subangular (Fig. 75).....*A. azalus*, p. 571
- 10' Aedeagus slightly asymmetrical, subapicolateral expansion rounded (Fig. 76)..... *A. contaminatus*, p. 572

*Anthonomus (Anthonomocyllus) tenuirostris* Champion  
Figs. 1, 2, 30, 53, 60, 70

*Anthonomus tenuirostris* Champion 1903: 187-188, Tab. XI, figs. 5, 5a, male; 6, female.  
*Lectotype* (here designated): GUATEMALA, male, on left hand side of card on which 2 males are mounted [♂] [Sp. figured] [Capetillo./ Guatemala./ Champion.] [B.C.A. Col.IV.4./ Anthonomus/ tenuirostris./ Champ.] [Type] (BMNH). *Paralectotypes*: GUATEMALA, 1 male, [♂] [Sp. figured] [Capetillo./ Guatemala./ Champion.] [B.C.A. Col.IV.4./ Anthonomus/ tenuirostris./ Champ.] [Type] (BMNH); 5 males [Duenas./ Guatemala./ G. C. Champion.] [B.C.A. Col.IV.4./ Anthonomus/ tenuirostris./ Champ.] [♂] (BMNH); 2 females [Duenas./ Guatemala./ G. C. Champion.] [B.C.A. Col.IV.4./ Anthonomus/ tenuirostris./ Champ.] (BMNH); 1 male, 1 female [♂ ♀] [Duenas./ Guatemala./ G. C. Champion.] [B.C.A. Col.IV.4./ Anthonomus/ tenuirostris./ Champ.] (BMNH). Blackwelder 1947: 838. Schenkling and Marshall 1934: 60. O'Brien and Wibmer 1982: 107.

*Anthonomus filirostris* Champion 1910: 187. *Lectotype* (here designated): MEXICO, male [Mexico/ Rtt] [♂] [B.C.A. Col.IV.7./ *Anthonomus/ filirostris/* Champ.] [*Anthonomus/ filirostris/* Ch] [LECTO-/ TYPE] [Type] [LECTOTYPE/ *Anthonomus/ filirostris/* Ch./ design. by/ 1966 H. R. Burke] (BMNH). *Paralectotype*: MEXICO, female [Type] [♀] [Mexico/ Rtt] [B.C.A. Col.IV.7./ *Anthonomus/ filirostris/* Champ.] (BMNH). Blackwelder 1947: 838. Schenkling and Marshall 1934: 60. O'Brien and Wibmer 1982: 107. NEW SYNONYMY.

*Recognition* (Figs. 1, 2).— Adults of *A. tenuirostris* are unique among *Anthonomocyllus* in the following characters: protibia (Fig. 53) strongly curved, widened medially, with short, acute, inner marginal tooth; eyes (Fig. 1) not protruding; scales on posterolateral portions of pronotum (Fig. 2) similar to those on other portions; metatibia of male (Fig. 60) slightly sinuate, without inner marginal prominence. They resemble adults of *A. acus* in the following character: rostrum straight, that of female (Fig. 1) slender, glabrous; and they share the following characters with that species and with *A. accola*: mesocoxae separated by distance ca. 0.3 x width of one mesocoxa; pygidium of female (Fig. 30) with short, carinate, apicodorsal prominence; abdominal sternum 5 of female with small posteromarginal clasp that receives apicomedian prominence of pygidium; endophallus (Fig. 70) with three small sclerites.

*Description*.—

**Male.** *Length*: 1.84–3.32 mm ( $\bar{x}$  = 2.85,  $n$  = 10). *Width*: 1.18–1.76 mm ( $\bar{x}$  = 1.52,  $n$  = 10). *Head*: vertex with sparse, slender, pallid fuscous scales; eyes large, narrowly separated by distance ca. 0.4 x width of rostrum at base. *Rostrum*: slender, nearly straight; length 1.34–1.95 x pronotal length ( $\bar{x}$  = 1.56,  $n$  = 10); smooth, sparsely punctate; glabrous except at extreme base; length of distal portion 31–38% of total rostral length ( $\bar{x}$  = 35,  $n$  = 10). *Prothorax*: pronotum without distinct subapical constriction; interspaces narrow, broadly exposed; with rounded, pallid, cinereous scales in diffuse middorsal and dorsolateral vittae and with slightly narrower, fuliginous scales in diffuse dorsolateral vittae; pleuron with broader, slightly imbricated, pallid cinereous scales. *Elytra*: interstriae nearly flat, 3rd widened at extreme base; dark integument broadly exposed between intermixed cinereous scales, fuliginous scales, and dark, fuscous scales; cinereous scales dense in postscutellar patch on sutural interstria. *Abdomen*: sternum 5 ca. 0.9 x as long as sternum 4, broadly, shallowly emarginate posteriorly, sparsely setose medially. *Legs*: profemur stout, ca. 1.1 x wider than metafemur; protibial uncus short, slender; metatibia with long, slender, oblique apical mucro. *Genitalia*: aedeagus symmetrical, widest basally, most strongly narrowed in distal 1/4, with slight apicolateral expansion.

**Female.** *Length*: 2.44–3.08 mm ( $\bar{x}$  = 2.76,  $n$  = 10). *Width*: 1.32–1.44 mm ( $\bar{x}$  = 1.36,  $n$  = 10). *Rostrum*: length 0.93–1.34 x pronotal length ( $\bar{x}$  = 1.26,  $n$  = 10); length of distal portion 36–46% of total rostral length ( $\bar{x}$  = 40,  $n$  = 10). *Abdomen*: sternum 5 with posterior margin slightly emarginate. *Legs*: protibia curved, with obtuse, median, inner marginal tooth; metatibia with inner marginal prominence; metatibial mucro obsolete.

*Distribution*.— In addition to the specimens in the type series of *A. tenuirostris* from Guatemala, and those of *A. filirostris* from México, 51 specimens (AUEM, TAMU) from the following localities were examined. GUATEMALA. *Guatemala*: Puerta Parada. MEXICO. *Morelos*: 4.4 mi. E Cuernavaca.

*Natural History*.— The specimens of *A. tenuirostris* from Puerta Parada, Guatemala, and Cuernavaca, México, were collected by beating *Zanthoxylum* plants in June and July.

*Synonymy*.— Direct comparison of the types revealed that the characters Champion (1910: 187) gave to distinguish *A. filirostris* from *A. tenuirostris*, namely the "not so coarse" vestiture and the dense white scales behind the scutellum, are not diagnostic. Champion himself correctly noted that some of the types of *A. tenuirostris* have white postscutellar scales. He also asserted that the rostrum in the types of *A. filirostris* is slightly more slender than that in the



types of *A. tenuirostris*, but this appears to be a function of the smaller size of the *A. filirostris* types. The male lectotype of *A. filirostris* is slightly smaller than the smallest of a large series of *A. tenuirostris* from Puerta Parada, Guatemala, whereas the female paralectotype is a little larger than the smallest of that series. The types of *A. tenuirostris* are slightly larger than the largest members of the Puerta Parada series.

*Anthonomus (Anthonomocyllus) acus*, new species

Figs. 3, 4, 31, 44, 71

*Type Series.*— *Holotype*: BRAZIL, male [BRASIL, Bahia/ Encruzilhada/ 960m.XI-1073/ Alvarenga & Scabra (sic)] (DZUP). *Paratypes*: BOLIVIA, 1 female [Bolivien/ Germain] [Coll. Kraatz] [Coll. DEI/ Eberswalde]. BRAZIL, 1 male, 5 females [BRASIL, Bahia/ Encruzilhada/ 960m.XI-1073/ Alvarenga & Scabra (sic)]; 3 females [BRASIL, Bahia/ Encruzilhada/ 960m.XI-1073/ M. Alvarenga]; 1 male [Brasilien/ Nova Teufonia/ 27°11'B. 52°23'L/ Fritz Plaumann/ 14 XII 1949/ 300 W. 500 m.] [Euphorbiaceae/ Alchornea/ sidaefolia]. MEXICO, 1 male [Coyame/ Catemaco/ V.C., Mex.] [VI 15 54/ D G Kissinger] [5] [Anthonomus/ prob. filirostris Ch/ det. H. R. Burke 61] [1 ♂ in BM./ R.T.Thompson]. Total paratypes, 12 (AUEM, CWOB, DEIC, DZUP, MZSP, TAMU, USNM).

*Recognition (Figs. 3, 4).*— Adults of *A. acus* are similar to those of *A. tenuirostris* in having the rostrum of the female (cf. Fig. 1) straight, slender and glabrous and in having narrowly separated mesocoxae. They are distinguished from adults of that species by the following characters: eyes (Fig. 3) protruding; pronotum (Fig. 4) with broad, pallid scales in large fascia on all but posterolateral portions; protibia straight, inner marginal tooth blunt; metatibia of male with ventral margin straight. In general appearance, adults of *A. acus* are somewhat intermediate between adults of *A. tenuirostris* and those of the other species in the *A. tenuirostris* group. The elytra of *A. acus* are less strongly convex than those of *A. tenuirostris*, but more rounded than the other members of the subgenus. The vestiture of the pronotum and elytra of *A. acus* is also more like that of the other members of the subgenus.

*Description.*—

**Male.** *Length*: 2.20-2.72 mm ( $\bar{x}$  = 2.50,  $n$  = 5). *Width*: 1.14-1.40 mm ( $\bar{x}$  = 1.26,  $n$  = 5). *Head*: vertex with broad, dark fuscous scales; eyes protruding, tilted forward, narrowly separated by distance ca. 0.5 x width of rostrum at base. *Rostrum*: slender, nearly straight; length 1.41-1.62 x pronotal length ( $\bar{x}$  = 1.50,  $n$  = 5); carinae feebly developed; scales slender; length of distal portion 34-36% of total rostral length ( $\bar{x}$  = 35,  $n$  = 5). *Prothorax*: pronotum with feebly developed subapical constriction; interspaces narrowly exposed; with broad, apically rounded, fulvoaeneous scales and sparsely admixed narrower, darker scales; pleuron with broadly imbricated, whitish scales. *Elytra*: interstriae nearly flat, 3rd widened at extreme base; dark integument narrowly exposed between intermixed white scales and pallid and dark fulvoaeneous scales; cinereous scales dense in postscutellar patch on sutural interstriae and in posteromedian fascicles. *Abdomen*: sternum 5 ca. 0.8 x as long as sternum 4, broadly, shallowly emarginate posteriorly, setose medially. *Legs*: profemur slender, ca. 1.2 x wider than metafemur; protibial uncus short, slender; metatibial uncus stout, conical, excavated. *Genitalia*: aedeagus symmetrical, widest basally, most strongly narrowed in distal 1/4, with slight apicolateral expansion.

**Female.** *Length*: 2.32-2.56 mm ( $\bar{x}$  = 2.47,  $n$  = 8) *Width*: 1.22-1.32 mm ( $\bar{x}$  = 1.24,  $n$  = 8). *Rostrum*: length 1.07-1.65 x pronotal length ( $\bar{x}$  = 1.50,  $n$  = 8); length of distal portion 48-53% of total rostral length ( $\bar{x}$  = 50,  $n$  = 8). *Legs*: protibia straight, with acute inner marginal tooth; metatibia straight, without inner marginal tooth; metatibial mucro obsolete.

*Distribution.*— *Anthonomus acus* is known only from the type series from widely separated localities in the states of Bahia and Santa Catarina, Brazil, and in the state of Veracruz, México.

*Natural History.*— Label data indicate that one of the paratypes of *A. acus* was collected on *Alchornea sidaefolia* in Nova Teufonia, Brazil. In view of the fact that several other members of the subgenus, including the closely related *A. tenuirostris*, are known to be associated with *Zanthoxylum* (Rutaceae), it seems unlikely that this member of the Euphorbiaceae is actually a host. Examined specimens were collected in June (México), November and December (Brazil).

*Etymology.*— The specific epithet, a Latin noun meaning needle, refers to the shape of the rostrum of the female.

*Anthonomus (Anthonomocyllus) accola*, new species

Figs. 5, 6, 32, 45, 54, 61, 72

*Type Series.*— *Holotype*: VENEZUELA, male, [Venezuela, Aragua/ El Limon 490m./ 14-VI-1977] [En la/ Luz] [F. Fernandez Y./ col.] (IZAV). *Paratypes*: VENEZUELA, 1 female [Venezuela, Aragua/ El Limon 450m./ 27-IV-1976] [S. Clavijo/ J. Clavijo] [Luz de/ Mercurio]; 1 female [Venezuela, Aragua/ El Limon 450m./ 18-IV-1977] [B. Bechyne/ leg.]; 2 females [Venezuela, Aragua/ El Limon 450m./ 24-IV-1977] [Luz de/ Mercurio] [F. Fernandez Y./ col.]; 1 female [Venezuela, Aragua/ El Limon 450m./ 28-IV-1977] [Luz de/ Mercurio] [F. Fernandez Y./ col.]; 1 male, 1 female [Venezuela, Aragua/ El Limon 450m./ 14-VI-1977] [B. Bechyne/ leg.]. Total paratypes, 7 (AUEM, IZAV, TAMU).

*Recognition* (Figs. 5, 6).— The relatively large adults of *A. accola* are distinguished by the following combination of characters: mesosternum carinate between mesocoxae; metatibia of male (Fig. 61) stout, with large inner marginal prominence; mesocoxae narrowly separated by distance ca. 0.3 x width of one mesocoxa; pygidium of female (Fig. 32) with short, carinate, apicodorsal prominence; abdominal sternum 5 of female (Fig. 45) with posteromarginal clasp that receives apicomedian prominence of pygidium; endophallus (Fig. 72) with three large sclerites.

Adults of *A. accola* are larger but otherwise resemble those of *A. argentatus*. Adults of both species have dark integument on the median portion of abdominal sternum 5 and slightly elevated odd-numbered elytral interstriae. Adults of *A. accola* are more like those of *A. tenuirostris* and *A. acus*, however, in the armature of the endophallus (*cf.* Figs. 70-72), the shape of the pygidium of the female (*cf.* Figs. 30-32), and in possession of a posteromarginal "clasp" on abdominal sternum 5 of the female (Figs. 44, 45) that receives an apicomedian prominence of the pygidium.

*Description.*—

*Male.* *Length*: 3.32-3.48 mm ( $\bar{x}$  = 3.40,  $n$  = 2). *Width*: 1.14-1.40 mm ( $\bar{x}$  = 1.26,  $n$  = 2). *Head*: vertex with broad, rounded scales; eyes large, nearly round, strongly convex, separated by distance ca. 0.7 x width of rostrum at base. *Rostrum*: slender, slightly curved over antennal insertions; length 1.10-1.11 x pronotal length ( $\bar{x}$  = 1.11,  $n$  = 2); scales dense, broad; carinae obsolete; length of distal portion 27-28% of total rostral length ( $\bar{x}$  = 28,  $n$  = 2). *Prothorax*: pronotum flattened, with slight dorsolateral depressions and postocular prominences; with slightly imbricated, rounded, pallid scales, slightly narrower, subtruncate, fulvoaeneous scales and narrower, darker fuscoaeneous scales; broad scales dense apically, in transverse middorsal fascia, and on pleuron. *Elytra*: sutural, 3rd and 5th interstriae slightly convex; interstriae with imbricated, pallid scales, fulvescent to fuliginous scales and fuscous scales; dark scales dense on median portion of sutural interstriae and on basal portion of interstria 3; pallid scales subfasciculate throughout. *Abdomen*: sternum 5 broadly, shallowly emarginate posteriorly.

flattened medially, with slight posteromarginal prominence. *Legs*: profemur *ca.* 1.0 x as wide as metafemur; protibia straight, inner margin concave between slender, acute median tooth and blunt, preapical tooth; protibial uncus slender, acute; metatibial mucro small, slender, truncate. *Genitalia*: aedeagus symmetrical, broad, narrowed to blunt apex, not constricted medially, without apicolateral prominences.

**Female.** *Length*: 3.44–3.80 mm ( $\bar{x}$  = 3.56, *n* = 6). *Width*: 1.64–1.80 mm ( $\bar{x}$  = 1.68, *n* = 6). *Rostrum*: slender, slightly, evenly curved; scales dense, broad; carinae obsolete; length 1.11–1.24 x pronotal length ( $\bar{x}$  = 1.20, *n* = 6); length of distal portion 36–42% of total rostral length ( $\bar{x}$  = 39, *n* = 6). *Abdomen*: sterna 3–5 ascending. *Legs*: metatibial mucro short, stout.

*Distribution*.— *Anthonomus accola* is known only from the type series from the state of Aragua, Venezuela.

*Natural History*.— Nothing is known about the life history and hosts of *A. accola*. Label data indicate that the specimens in the type series were collected at light in April and June.

*Etymology*.— The specific epithet, a Latin noun meaning neighbor, refers to the fact that this species lives near the home of Carlos Bordón in the community of El Limón, near Maracay, Venezuela.

*Anthonomus (Anthonomocyllus) argentatus* Gyllenhal

Figs. 7, 8, 33, 46, 55, 62, 73

*Anthonomus argentatus* Gyllenhal 1836: 343. *Holotype*: ST. BARTHELEMY, male [Typus] [St. Barthemeli/ Forss röm. (sic)] [17] [45/ 88] [Riksmuseum/ Stockholm] (NHRS). Boheman 1843: 219. Schenkling and Marshall 1934: 55. Blackwelder 1947: 838. O'Brien and Wibmer 1982: 106.

*Recognition* (Figs. 7, 8).— Adults of *A. argentatus* are distinguished by the following combination of characters: odd-numbered elytral interstriae slightly elevated; inner marginal protibial prominence (Fig. 55) long, slender, acute; aedeagus (Fig. 73) broadly constricted medially, with short apicolateral prominences; sutural elytral interstriae (Fig. 8) without postscutellar patch of broad, pallid scales; pygidium of female (Fig. 33) with widely separated apicolateral prominences, excavated in apicodorsal 1/4; mesocoxae widely separated by distance *ca.* 0.8 x width of one mesocoxa.

In lacking an anteromedian fovea on abdominal sternum 5, adult females of *A. argentatus* are like those of *A. accola*, *A. acus* and *A. tenuirostris*. Adults of *A. argentatus* are also similar to those of *A. accola* in having a dark patch of integument on abdominal sternum 5 and slightly elevated odd-numbered elytral interstriae. Adult females of *A. argentatus* have the pygidium more like that of *A. costulatus* (*cf.* Figs. 33, 34) than that of any of the aforementioned species, however, and like adult females of *A. costulatus*, they lack a posteromarginal clasp on abdominal sternum 5.

*Description*.—

**Male.** *Length*: 2.08–2.56 mm ( $\bar{x}$  = 2, 37; *n* = 10). *Width*: 1.04–1.32 mm ( $\bar{x}$  = 1.20, *n* = 10). *Head*: vertex with broad, rounded scales; eyes protruding, separated by distance *ca.* 0.5 x width of rostrum at base. *Rostrum*: slender, slightly curved over antennal insertions; length 1.33–1.59 x pronotal length ( $\bar{x}$  = 1.46, *n* = 10), with dense, broad scales; carinae obsolete; length of distal portion 27–35% of total rostral length ( $\bar{x}$  = 30, *n* = 10). *Prothorax*: pronotum flattened, with slight dorsolateral depressions and postocular prominences; with slightly imbricated, rounded, pallid whitish scales, narrower, subtruncate, fulvoaeneous scales and narrower, darker fuscoaeneous scales; broad scales dense apically, in transverse middorsal fascia, and on pleuron. *Elytra*: interstriae with imbricated, whitish scales, pallid fulvescent to fuliginous scales, and dark, fuscous scales that form diffuse discal macula; pallid scales dense in diffuse, transverse, posteromedian fascia. *Abdomen*: sternum 5 *ca.* 1.1 x longer than sternum 4, deeply emarginate posteriorly, with slight median concavity and posteromedian prominence. *Legs*: profemur *ca.* 1.0



x as wide as metafemur; protibia straight, protibial uncus slender, acute; metatibia slightly sinuate, inner margin broadly concave between small tooth in proximal 1/3 and small preapical tooth; metatibial mucro small, slender, curved. *Genitalia*: endophallus unarmed.

**Female.** *Length*: 2.20–2.60 mm ( $\bar{x}$  = 2.36,  $n$  = 5). *Width*: 1.10–1.30 mm ( $\bar{x}$  = 1.20,  $n$  = 5). *Rostrum*: slender, slightly, evenly curved; length 1.58–1.74 x pronotal length ( $\bar{x}$  = 1.69,  $n$  = 5); length of distal portion 43–51% of total rostral length ( $\bar{x}$  = 47,  $n$  = 5). *Abdomen*: sterna 3–5 ascending; sternum 5 broadly, shallowly concave medially. *Legs*: protibia with long, acute, inner marginal tooth; metatibia with obsolescent ventral marginal tooth in proximal 1/3; metatibial mucro obsolete.

*Distribution*.— In addition to the holotype of *A. argentatus* from the West Indian island of St. Barthélemy, 17 specimens (CWOB, HAHC, MHND, TAMU, USNM, ZMHB) from the following localities were examined. CUBA. *La Habana*: Cayamas. JAMAICA. *Manchester*: Skull Point. REPUBLICA DOMINICANA. *Distrito Nacional*: Boca Chica. PUERTO RICO. *Caribbean National Forest*: El Verde. *Guánica*: Highway 334 at Guánica Forest Ranger Station. *Ponce*: Ponce; Torres Finca. *San Juan*: Río Pedras. TRINIDAD. Arima Valley. VENEZUELA. *Distrito Federál*: Caracas.

*Natural History*.— A specimen of *A. argentatus* from Ponce, Puerto Rico, has a label indicating that it was collected on *Faramea occidentalis*. In view of the fact that several other members of the subgenus, including the closely related *A. tenuirostris*, are known to be associated with *Zanthoxylum* (Rutaceae), it seems unlikely that this member of the Rubiaceae is actually a host. Examined specimens were collected in March, May, July, August, and September.

#### *Anthonomus (Anthonomocyllus) costulatus* Suffrian

Figs. 9, 10, 34, 56, 63, 74

*Anthonomus costulatus* Suffrian 1871: 137. *Lectotype*: CUBA, male, designated by Burke 1975: 58. "Anth costulatus/ Cuba/ 39254; in ZIH" (Zoologisches Institut, Halle). Not examined. Gundlach 1891: 287. Schenkling and Marshall 1934: 38 (= *A. irroratus* Dietz). Ahmad and Burke 1972: 52–53 (= *A. irroratus* Dietz). Gates and Burke 1972: 1219–1221. Burke 1975: 58 (= *A. elegans* LeConte). O'Brien and Wibmer 1982: 106 (= *A. elegans* LeConte).

*Anthonomus elegans* LeConte 1876: 202. *Lectotype*: FLORIDA, male [Haulover/ March 10 Fla] [Type/ 1949] [J. L. Leconte/ Coll.] [LECTOTYPE/ *Anthonomus/ elegans* LeC./ design. by/ H. R. Burke] [*A. elegans* / Lec.] (MCZC), designated by Burke 1975: 58. *Paralectotype*: FLORIDA, 1 male [Haulover/ March 13 Fla] [48] [Type 1940] [J. L. Leconte/ Coll.] [PARALECTOTYPE/ *Anthonomus/ elegans* LeC./ des. H. R. Burke] (MCZC). Dietz 1891: 192. Blatchley and Leng 1916: 289. Blatchley 1925: 97. Schenkling and Marshall 1934: 38.

*Recognition* (Figs. 9, 10).— Adults of *A. costulatus* are distinguished by the following combination of characters: femora (Figs. 56, 63) with long scales on inner margin that exceed inner marginal tooth; metatibia of male (Fig. 63) strongly excavated between inner marginal prominence, outer margin emarginate apically; aedeagus (Fig. 74) abruptly widened subapically, truncate at apex, with shallow apicomedian emargination; inner marginal protibial prominence (Fig. 63) short, stout; pygidium of female (Fig. 34) with narrow, shallow, median concavity with long, broad scales and widely separated apicolateral prominences, excavated in apicodorsal 1/4; mesocoxae widely separated by distance ca. 0.8 x width of one mesocoxa; sutural elytral interstriae (Fig. 10) with postscutellar patch of broad, pallid scales; abdominal sternum 5 of female with anteromedian fovea.

The pygidium of the adult females of *A. costulatus* (Fig. 34) is very similar to that in *A. argentatus* (Fig. 33), but in other characters, notably the pygidial

channel in the female (Fig. 34) and the anteromedian fovea of abdominal sternum 5 of the female, adult *A. costulatus* more closely resemble adults of *A. azalus* (Fig. 47), *A. contaminatus*, *A. dentipes*, *A. guanita*, *A. pazmani* and *A. xanthoxyli*.

*Description.*—

**Male.** *Length:* 2.40–2.76 mm ( $\bar{x}$  = 2.53,  $n$  = 10). *Width:* 1.26–1.42 mm ( $\bar{x}$  = 1.36,  $n$  = 10). *Head:* vertex with broad, rounded scales; eyes protruding, separated by distance *ca.* 0.7 x width of rostrum at base. *Rostrum:* slender, slightly, evenly curved, length 1.14–1.36 x pronotal length ( $\bar{x}$  = 1.26,  $n$  = 10); carinae obsolete; scales broad, sparse; length of distal portion 31–38% of total rostral length ( $\bar{x}$  = 34,  $n$  = 10). *Prothorax:* pronotum flattened, with slight dorsolateral depressions and postocular prominences; with imbricated, rounded, pallid scales, narrower, subtruncate, fulvoaeneous scales and narrower fuscoaeneous scales; broad scales dense apically, in transverse middorsal fascia, and on pleuron. *Elytra:* interstriae slightly convex, with imbricated, whitish scales, pallid fulvescent to fuliginous scales and dark, fuscous scales; dark scales dense medially on sutural interstriae, on basal portion of interstria 3, on posteromedian portion of interstria 2, and in diffuse posterolateral macula across interstria 2–10; pallid scales dense on large anterolateral fascia and on declivities. *Abdomen:* sternum 5 *ca.* 1.2 x longer than sternum 4, broadly emarginate posteriorly, with dense, broad scales laterally, slightly concave and setose medially. *Legs:* profemur *ca.* 1.3 x wider than metafemur; protibial uncus short, stout, perpendicular; metatibia straight, inner margin excavated between blunt inner marginal tooth and apex; metatibia with outer margin emarginate apically, with slender, curved, excavated mucro and large, blunt, apicodorsal tooth. *Genitalia:* endophallus unarmed.

**Female.** *Length:* 2.32–2.56 mm ( $\bar{x}$  = 2.44,  $n$  = 10). *Width:* 1.26–1.40 mm ( $\bar{x}$  = 1.34,  $n$  = 10). *Rostrum:* slender; length 1.31–1.45 x pronotal length ( $\bar{x}$  = 1.37,  $n$  = 10); length of distal portion 38–45% of total rostral length ( $\bar{x}$  = 41,  $n$  = 10). *Legs:* metatibia slightly sinuate, without inner marginal tooth; metatibial mucro obsolete, apicodorsal tooth absent.

*Synonymy.*—The four specimens Suffrian (1871: 137–138) stated were in the original type series of *A. costulatus* were not examined. The identity of the species was determined by comparison of specimens with the original description and with descriptive notes and photographs of the specimen designated by Burke (1975: 58) as lectotype. A photograph of a specimen in the Gundlach Collection in the Instituto de Ecología y Sistemática, Academia de Ciencias de Cuba, Havana, identified as *A. costulatus*, was also examined. This specimen, pictured in dorsal view, has lost most of the scales on the dorsal surfaces, recalling Suffrian's (1871) statement that the syntypes were all "mehr oder weniger abgerieben". It was not possible to determine whether or not this specimen is conspecific with the lectotype.

Gates and Burke (1972: 1219–1220) noted that the name *A. costulatus* was considered to be a senior synonym of the name *A. irroratus* Dietz by Schwarz (1913), Blatchley and Leng (1916), Leng (1920), Schenkling and Marshall (1934) and Ahmad and Burke (1972). Based on examination of the specimen that would subsequently be designated as lectotype of *A. costulatus* by Burke (1975: 58), they determined that this synonymy was incorrect and that *A. irroratus* and *A. costulatus* are "separate and distinct species".

*Distribution.*—Suffrian (1871: 138) stated that *A. costulatus* was described from specimens "Von Dr. G. in den Bezirken Cienfugos (sic) und Cardenas im Mai gesammelt," and Gundlach (1891: 287) reported *A. costulatus* from Cardenas and Ciénaga de Zapata, Cuba. In addition to the lectotype and paralectotype of *A. elegans*, 51 specimens (AMNH, FSCA, TAMU, USNM, ZMHB) were examined in the present study. These are from the following localities. BAHAMAS. South Bimini. CUBA. *La Habana:* Cayamas. UNITED STATES. *Florida:* Everglades National Park. Dade Co.: Matheson Hammock. Monroe Co.: Key Largo. One examined specimen (USNM) bears the anomalous label [Banana leaf/ PANAMA/ N. Orleans/ L2 P.Q.#/ 6055/ Mch. 13-33'].

*Natural History*.— Blatchley and Leng (1916: 289) described *A. costulatus* (as *A. elegans*) as "very rare on oak shrubs; March 10". Blatchley (1925: 97) stated that the same species has been recorded as a subarctic Floridian species, found only on foliage near the sea. Examples are at hand from Palmdale and Royal Palm Park, both inland stations; also from Miami and Caxambus in addition to those previously mentioned. At Palmdale it was swept from a tall St. Johnswort.

Label data state that specimens from Key Largo, Florida, were taken by "beating hammock vegetation at night". Examined specimens were collected in November and December.

*Anthonomus (Anthonomocyllus) azalus*, new species

Figs. 35, 47, 75

*Type Series*.— *Holotype*: MEXICO, male [MEXICO: Baja Calif./ Sur, 1650' 2.4 mi. NE./ El Sauzal, 14-VIII-/ 1980, R. L. Westcott] [on rutaceous/ shrub] (CWOB). *Paratypes*: MEXICO, 9 males, 5 females [MEXICO: Baja Calif./ Sur, 1650' 2.4 mi. NE./ El Sauzal, 14-VIII-/ 1980, R. L. Westcott] [on rutaceous/ shrub]; 1 male [MEX Baja/ Calif Carrizal/ 6-6-74/ Foster & Slaten] [Jesus Nevarez/ cotton farm/ 74-8320]; 1 male [MEXICO: B.C.S./ El Triunfo/ 13.IX.1978/ D. R. Whitehead]; 1 male [MEX., Baja Calif. Sur/ arroyo .4 mi N./ .6 mi E Migrino/ (18-21)-IV-1985/ R. L. Westcott]; 1 female [MEX: Baja Cal. Sur/ 9.4 mi. W. hwy. 1 on/ Ramal a San Felipe/ IX-10-11-88: E. Riley]. Total paratypes, 18 (AUEM, CWOB, RSAC, TAMU, USNM).

*Recognition*.— Adults of *A. azalus* are distinguished by the following combination of characters: aedeagus (Fig. 75) broadly constricted in distal 2/3, widened apically, apex subtruncate, broadly, shallowly emarginate medially; pygidium of female (Fig. 35) with apicodorsal concavity with long, broad scales and with thick apicolateral prominences; abdominal sternum 5 of female (Fig. 47) with anteromedian fovea; sutural elytral interstriae with postscutellar patch of broad, pallid scales; mesocoxae separated by distance *ca.* 0.6 x width of one mesocoxa; metatibia of male without inner marginal prominence; protibia with short, stout, inner marginal prominence and well-developed preapical tooth.

The relatively large, robust adults of *A. azalus* closely resemble adults of *A. dentipes*, *A. contaminatus* and *A. pazmani*. The structure of the pygidium of the female is nearly identical in these species (*cf.* Figs. 35-37).

*Description*.—

*Male*. *Length*: 2.48–3.48 mm ( $\bar{x}$  = 3.03,  $n$  = 10). *Width*: 1.38–1.76 mm ( $\bar{x}$  = 1.59,  $n$  = 10). *Head*: vertex with broad, rounded scales; eyes protruding, narrowly separated by distance *ca.* 0.4 x width of rostrum at base. *Rostrum*: stout, slightly curved distally; length 1.19–1.37 x pronotal length ( $\bar{x}$  = 1.27,  $n$  = 10); scales broad, dense; carinae obsolete; length of distal portion 29–35% of total rostral length ( $\bar{x}$  = 32,  $n$  = 10). *Prothorax*: pronotum flattened, with slight dorsolateral depressions and postocular prominences; with imbricated, rounded, pallid scales, narrower, subtruncate, fulvoaeneous scales and narrower, fuscoaeneous scales; broad scales dense apically, in transverse middorsal fascia, and on pleuron. *Elytra*: interstriae nearly flat, with imbricated, whitish scales, pallid fulvescent to fuliginous scales, and dark, fuscous scales; dark scales dense medially on sutural interstriae, on basal portion of interstria 3, on short posteromedian section of interstria 2, and in diffuse posterolateral macula across interstriae 2-10; pallid scales dense in short to elongate fascicles around posterolateral macula and in declivital fascia. *Abdomen*: sternum 5 *ca.* 0.9 x as long as sternum 4, broadly, deeply emarginate posteriorly, with dense scales laterally, slightly concave and setose medially. *Legs*: protibial uncus stout, long, curved; metatibial mucro short, curved, oblique. *Genitalia*: endophallus unarmed.

**Female.** *Length:* 2.80–3.20 mm ( $\bar{x}$  = 3.06,  $n$  = 5). *Width:* 1.60–1.72 mm ( $\bar{x}$  = 1.65,  $n$  = 5). *Rostrum:* slender; length 1.34–1.60 x pronotal length ( $\bar{x}$  = 1.47,  $n$  = 5); length of distal portion 41–44% of total rostral length ( $\bar{x}$  = 42,  $n$  = 5). *Abdomen:* sternum 5 with shallow, subtruncate, apicomedian emargination. *Legs:* protibia with inner marginal tooth; metatibia without inner marginal tooth; metatibial mucro obsolete.

*Distribution.*— *Anthonomus azalus* is known only from the type series from Baja California Sur, México.

*Natural History.*— The holotype and some of the paratypes of *A. azalus* were collected, according to label data, on a "rutaceous shrub".

*Etymology.*— The specific epithet is an anagram of part of the name of the type locality.

*Anthonomus (Anthonomocyllus) contaminatus* Boheman

Figs. 11, 12, 36, 76

*Anthonomus contaminatus* Boheman 1843: 219–220. *Holotype:* BRAZIL, male [Brasilia/ Faldern.] [Typus] [contaminatus/ Boh.] [39/ 53] [68/ 84] [424/ 87] [Riksmuseum/ Stockholm] (NHRS). Schenkling and Marshall 1934: 56. Wibmer and O'Brien 1986: 203.

*Recognition (Figs. 11, 12).*— Adults of *A. contaminatus* are distinguished by the following combination of characters: aedeagus (Fig. 76) slightly asymmetrical, widened apically, with slight apicomedian emargination; metatibia of male without inner marginal prominence; sutural elytral interstriae (Fig. 12) with postscutellar patch of broad, pallid scales; protibia with well-developed preapical tooth; mesocoxae separated by distance ca. 0.7 x width of one mesocoxa; pygidium of female (Fig. 36) with narrow middorsal channel with long, broad scales and stout, narrowly separated, apicolateral prominences; abdominal sternum 5 of female with anteromedian fovea.

*Anthonomus contaminatus* is distinguished from *A. dentipes* by the shape of the aedeagus (cf. Figs. 76, 77) and by the absence of a prominence on the inner margin of the metatibia. The aedeagus of *A. contaminatus* is similar to that in *A. xanthoxyli* (cf. Figs. 76, 80), but in the latter species this has a shallow apicomedian emargination between two relatively narrowly separated apical prominences and two ridges extend basad from each prominence to the dorsal orifice.

*Description.*—

**Male.** *Length:* 2.60–3.16 mm ( $\bar{x}$  = 2.88,  $n=2$ ). *Width:* 1.36–1.68 mm ( $\bar{x}$  = 1.52,  $n=2$ ). *Head:* vertex with broad, rounded scales; eyes protruding, narrowly separated by distance ca. 0.4 x width of rostrum at base. *Rostrum:* slender, slightly curved distally; length 1.30–1.40 x pronotal length ( $\bar{x}$  = 1.35,  $n$  = 2); scales broad, dense; carinae well developed; length of distal portion 29–31% of total rostral length ( $\bar{x}$  = 30,  $n$  = 2). *Prothorax:* pronotum flattened, with slight dorsolateral depressions and slight postocular prominences; with imbricated, rounded, pallid scales, narrower, subtruncate, fulvoaeneous scales and narrower, fuscoaeneous scales; broad scales dense apically, in transverse middorsal fascia, and on pleuron. *Elytra:* interstriae nearly flat, with imbricated, whitish scales, pallid fulvescent to fuliginous scales, and dark, fuscous scales; dark scales dense on median portion of sutural interstriae, on basal portion of interstria 3, and on short posteromedian section of interstria 2; pallid scales dense in small, median fascicles and in declivital fascia. *Abdomen:* sternum 5 ca. 0.8 x as long as sternum 4, broadly emarginate posteriorly, sparsely setose medially. *Legs:* profemur ca. 1.0 x as wide as metafemur; protibia straight, inner margin concave between large, blunt, median tooth and conical preapical tooth; protibial uncus long, stout, curved; metatibial mucro short, slender, curved. *Genitalia:* endophallus unarmed.

**Female.** *Length:* 2.64 mm ( $n$  = 1). *Width:* 1.44 mm ( $n$  = 1). *Rostrum:* slender; length 1.50 x pronotal length ( $n$  = 1); length of distal portion 45% of total rostral length ( $n$  = 1).



*Abdomen:* sternum 5 with broad, shallow, subtruncate apicomedian emargination. *Legs:* protibia with inner marginal tooth; metatibia without inner marginal tooth; metatibial mucro obsolete.

*Distribution.*— In addition to the holotype from an unspecified locality in Brazil, two specimens (TAMU) of *A. contaminatus* from the following localities were examined. COLOMBIA. *Valle de Cauca:* 16 km. S Restrepo. VENEZUELA. *Falcón:* La Cruz de Taratara.

*Natural History.*— The specimens of *A. contaminatus* from Colombia and Venezuela were both collected by beating plants in June. The plants were well past the fruiting stage and weevils were not abundant.

*Anthonomus (Anthonomocyllus) dentipes* Hustache

Figs. 13, 14, 37, 57, 64, 77

*Anthonomus dentipes* Hustache 1940: 114-115. *Lectotype* (here designated): ARGENTINA, male [BUENOS AIRES ARGENTINA/ ISLA MARTIN GARCIA/ 6-1936 M. J. VIANA] [♂] [TYPE] [MUSEUM PARIS/ 1949/ Col. A HUSTACHE] [anthonomus/ (Leptarthrus)/ dentipes/ m.] (MNHN). *Paralectotype:* 1 female [BUENOS AIRES ARGENTINA/ ISLA MARTIN GARCIA/ 1938 M. J. VIANA] [♀] [MUSEUM PARIS/ 1949/ Col. A. HUSTACHE] [dentipes] (MNHN). Wibmer and O'Brien 1986: 203

*Anthonomus (Anthonomocyllus) murinofasciatus* Voss 1944: 48. *Neotype* (here designated): BRAZIL, male [Brasilien/ Nova Teutônia/ 27°11'B . 52°23'L/ Fritz Plaumann/ VIII-1954/ 300-500 m] (MZSP). Weidner 1979: 398. Wibmer and O'Brien 1986: 204. NEW SYNONYMY.

*Recognition.*— (Figs. 13, 14). Adults of *A. dentipes* are distinguished by the following combination of characters: pygidium of female with narrow middorsal channel with long, broad scales and with stout, narrowly separated, apicolateral prominences; aedeagus (Fig. 77) with slight subapical constriction, subtruncate at apex; metatibia of male (Fig. 64) with slight inner marginal prominence; inner marginal protibial prominence (Fig. 57) short, stout; abdominal sternum 5 of female with anteromedian fovea; mesocoxae widely separated by distance ca. 0.5 x width of one mesocoxa; sutural elytral interstriae (Fig. 14) with postscutellar patch of broad, pallid scales.

Aside from the shape of the aedeagus (*cf.* Figs. 76, 77), *A. dentipes* differs from *A. contaminatus* only in possession of a slight inner marginal prominence on the metatibia.

*Description.*—

*Male.* *Length:* 2.64-2.72 mm ( $\bar{x}$  = 2.68, n = 2). *Width:* 1.32-1.36 mm ( $\bar{x}$  = 1.34, n = 2).

*Head:* vertex with broad, rounded scales; eyes protruding, separated by distance ca. 0.7 x width of rostrum at base. *Rostrum:* slender, slightly curved distally; length 1.10-1.24 x pronotal length ( $\bar{x}$  = 1.17, n = 2); carinae well-developed; scales broad, sparse; length of distal portion 33-37% of total rostral length ( $\bar{x}$  = 35, n = 2). *Prothorax:* pronotum flattened, with slight dorsolateral depressions and postocular prominences; with imbricated, apically rounded, pallid scales, narrower, subtruncate, fulvoaeneous scales and narrower, fuscoaeneous scales; broad scales dense apically, in transverse middorsal fascia, and on pleuron. *Elytra:* interstriae nearly flat, with imbricated, whitish scales, pallid fulvescent to fuliginous scales and dark, fuscous scales; dark scales dense medially on sutural interstriae, on basal portion of interstria 3, on short posteromedian section of interstria 2, and in diffuse posterolateral macula across interstriae 2-10; pallid scales dense in short to elongate fascicles around posterolateral macula and in declivital fascia. *Abdomen:* sternum 5 ca. 0.8 x as long as sternum 4, broadly emarginate posteriorly, with dense, broad scales laterally, slightly concave and setose medially. *Legs:* profemur ca. 1.0 x as wide as metafemur; protibial uncus long, stout, curved; metatibial mucro short, stout, curved. *Genitalia:* endophallus unarmed.

*Female.* *Length:* 2.76-2.80 mm ( $\bar{x}$  = 2.78, n = 2). *Width:* 1.34-1.46 mm ( $\bar{x}$  = 1.40, n = 2). *Rostrum:* slender; length 1.37-1.46 x pronotal length ( $\bar{x}$  = 1.42, n = 2); length of distal

portion 44-45% of total rostral length ( $\bar{x} = 45$ ,  $n = 2$ ). *Legs*: protibia with inner marginal tooth, without preapical tooth; metatibia without inner marginal tooth; metatibial mucro obsolete.

*Distribution*.— In addition to the lectotype and one paralectotype of *A. dentipes* from the Isla Martín García, Buenos Aires, Argentina, and the neotype of *A. murinofasciatus* from Nova Teutônia, Santa Catarina, Brazil, three additional specimens (MZSP) from Nova Teutônia were examined.

*Natural History*.— Nothing is known about the life history and hosts of *A. dentipes*. Examined specimens were collected in April, August, and November.

*Neotype*.— Voss (1944: 48) described *A. murinofasciatus* from a single male that he stated was in his own collection. Apparently that specimen, collected by F. Plaumann in Nova Teutônia, Santa Catarina, Brazil, no longer exists. Weidner (1979: 398) listed *A. murinofasciatus* as one of the species described by Voss whose types have been destroyed. Plaumann (in litt.) asserted that the species is not represented in his collection. The label data cited by Voss (1944: 48) for the holotype ("Brasilien: Nova Teutônia. 27°s. Br. 52-53°w. L. (15.10.1935. Plaumann leg.") are like those of the male specimen (MZSP) designated as neotype except for the date of collection. The neotype agrees with the original description except that the hind femur has a small tooth. This tooth is nearly concealed by long scales and could easily have been overlooked when the original description was prepared.

*Anthonomus (Anthonomocyllus) guanita*, new species

Figs. 15, 16, 38, 48, 58, 65, 78

*Type Series*.— *Holotype*: ANTIGUA, male [Antigua, BWI/ St. John/ Jan. 12/14, 1955/ A. M. Nadler] (AMNH). *Paratypes*: GUADELOUPE, 1 male, 1 female [GUADELOUPE/ St. François/ Anse la Boisse/ 4-II-1966/ J. Bonfils] [sat/ Zanthoxylum/ spinifex D.C./ 542-08]. REPUBLICA DOMINICANA, 1 female [Los Ranchitos/ S. J. Ocoa, Prov./ Peravia, R.D./ 18-IX-1979/ Cols. Aquino - Reynoso]; Total paratypes, 3 (CMFP, MHND).

*Recognition (Figs. 15, 16)*.— Adults of *A. guanita* are distinguished by the following combination of characters: femora (Figs. 58, 65) short, stout; metatibia of male (Fig. 65) slightly excavated between obtuse inner marginal prominence and apex, inner margin distended apically, with small, conical, preapical tooth; aedeagus (Fig. 78) with long, slender, apical extension; pygidium of female (Fig. 38) with broad median channel with long, broad scales and with widely separated apicolateral prominences; abdominal sternum 5 of female (Fig. 48) foveate, emarginate; mesocoxae widely separated by distance *ca.* 0.8 x width of one mesocoxa; sutural elytral interstriae (Fig. 16) with postscutellar patch of broad, pallid scales; inner marginal protibial prominence (Fig. 58) short, stout.

*Description*.—

*Male*. *Length* 2.16-2.28 mm ( $\bar{x} = 2.22$ ,  $n = 2$ ). *Width*: 1.16-1.24 mm ( $\bar{x} = 1.20$ ,  $n = 2$ ). *Head*: vertex with broad, rounded scales; enter with slightly broader, more pallid scales; eyes protruding, separated by distance *ca.* 0.5 x width of rostrum at base. *Rostrum*: slender, slightly curved over antennal insertions; length 1.14-1.37 x pronotal length ( $\bar{x} = 1.26$ ,  $n = 2$ ), with dense, broad scales; carinae obsolete; length of distal portion 25-27% of total rostral length ( $\bar{x} = 26$ ,  $n = 2$ ). *Prothorax*: pronotum flattened, with slight dorsolateral depressions and postocular prominences; with imbricated, rounded, pallid scales, narrower, subtruncate, fulvoaeous scales and narrower, fuscoaeous scales; broad scales dense apically, in transverse middorsal fascia, and on pleuron. *Elytra*: interstriae nearly flat, with imbricated, whitish scales, pallid fulvescent to fuliginous scales, and dark, fuscous scales that are dense on median portion of sutural interstriae, on basal portion of interstria 3, on short posteromedian section of interstria 2, and in diffuse

posterolateral macula across interstriae 2-10; pallid scales dense in short to elongate fascicles around posterolateral macula and in declivital fascia. *Abdomen*: sternum 5 ca. 1.1 x longer than sternum 4, broadly, shallowly emarginate posteriorly, with dense scales laterally, slightly concave and setose medially. *Legs*: profemur ca. 1.1 x wider than metafemur; protibia with blunt preapical tooth; protibial uncus short, slender, acute; metatibial uncus short, acute.

**Female.** *Length*: 2.32-2.36 mm ( $\bar{x}$  = 2.34,  $n$  = 2). *Width*: 1.24-1.26 mm ( $\bar{x}$  = 1.25,  $n$  = 2). *Rostrum*: slender, slightly, evenly curved; length 1.29-1.44 x pronotal length ( $\bar{x}$  = 1.37,  $n$  = 2); length of distal portion 39-46% of total rostral length ( $\bar{x}$  = 43,  $n$  = 2). *Legs*: protibia with inner marginal tooth; metatibia with obsolescent inner marginal tooth in proximal 1/3; metatibial mucro obsolete.

*Distribution*.— *Anthonomus guanita* is known only from the type series from the West Indian islands of Antigua, Guadeloupe and Hispaniola.

*Natural History*.— One of the paratypes of *A. guanita* was collected on *Zanthoxylum spinifex* D.C.

*Etymology*.— The specific epithet is an anagram of the name of the type locality.

*Anthonomus (Anthonomocyllus) pazmani*, new species

Fig. 79

*Type Series*.— *Holotype*: MEXICO, male [MEXICO: Hgo., 12 mi/ S. Zimapan, 6700'/ V-28-1974 C. W. & L./ O'Brien & Marshall] (CWOB).

*Recognition*.— The holotype of *A. pazmani* is distinguished by the following combination of characters: aedeagus (Fig. 79) asymmetrical, strongly expanded at apex; metatibia of male with slight inner marginal prominence; inner marginal protibial prominence short, stout; mesocoxae widely separated by distance ca. 0.8 x width of one mesocoxa; sutural elytral interstriae with postscutellar patch of broad, pallid scales.

The holotype of *A. pazmani* is larger and stouter, but otherwise closely resembles adults of *A. dentipes* and *A. contaminatus*. The three species are distinguished by the shape of the aedeagus (cf. Figs. 76, 77, 79). The aedeagus of *A. pazmani* is similar to that in *A. contaminatus*, but the latter lacks the extreme apical expansion exhibited in *A. pazmani* (cf. Figs. 76, 79). The metatibia of the adult male of *A. pazmani* is similar to that of *A. dentipes* (Fig. 64) in having a slight inner marginal prominence not present in *A. contaminatus*.

*Description*.—

**Male.** *Length*: 3.12 mm ( $n$  = 1). *Width*: 1.70 mm ( $n$  = 1). *Head*: vertex with broad, rounded scales; eyes protruding, narrowly separated by distance ca. 0.4 x width of rostrum at base. *Rostrum*: slightly curved distally; length 1.35 x pronotal length ( $n$  = 1); scales broad, dense; carinae obsolete; length of distal portion 35% of total rostral length ( $n$  = 1). *Prothorax*: pronotum flattened, with slight dorsolateral depressions and postocular prominences; with imbricated, rounded, pallid scales, narrower, subtruncate, fulvoaeneous scales and narrower, fuscoaeneous scales; broad scales dense apically, in transverse middorsal fascia, and on pleuron. *Elytra*: interstriae nearly flat, with imbricated, whitish scales, pallid fulvescent to fuliginous scales, and dark, fuscous scales; dark scales dense on median portion of sutural interstriae, on basal portion of interstria 3, on short posteromedian section of interstria 2, and in diffuse posterolateral macula across interstriae 2-10; pallid scales dense in short to elongate fascicles around posterolateral macula, and in declivital fascia. *Abdomen*: sternum 5 ca. 0.8 x as long as sternum 4, deeply, broadly emarginate posteriorly, with dense scales laterally, slightly concave and setose medially. *Legs*: profemur ca. 1.2 x wider than metafemur; protibial uncus stout, long, curved; metatibial mucro short, acute, oblique. *Genitalia*: endophallus unarmed.

**Female.** Unknown.

*Distribution*.— *Anthonomus pazmani* is known only from the holotype from the state of Hidalgo, México.

*Natural History*.— Nothing is known about the life history and hosts of *A. pazmani*.

*Etymology*.— The specific epithet is an anagram of the name of the type locality.

*Anthonomus (Anthonomocyllus) xanthoxyli* Linell

Figs. 17, 18, 39, 49, 59, 66, 80

*Anthonomus xanthoxyli* Linell 1897: 49-50. *Holotype*: TEXAS, female [Type No. 1399/ U.S.N.M.] [San Diego/ 27.10 Tex.] [E. A. Schwarz/ collector] USNM. *Paratypes*: TEXAS, 15 [San Diego/ 27.10 Tex.] [E. A. Schwarz/ collector] USNM; 1 [Victoria, Tex. 4, 6-11] [on *Xanthoxylum/ clava-herculis*] [J. D. Mitchell/ collector] USNM; 5 [Brownsville, Tex. III-20-08] USNM; [Rio Grande City/ Tex./ X-29-36] [in seed/ *Fagara fagara*] USNM. Townsend 1903. Schenkling and Marshall 1934: 38. Burke 1962: 204-205. Burke and Gates 1974: 325-326. O'Brien and Wibmer 1982: 108.

*Recognition (Figs. 17, 18)*.— Adults of *A. xanthoxyli* are distinguished by the following combination of characters: abdominal sternum 5 of female (Fig. 49) with a u-shaped posteromedian emargination and an anteromedian fovea; aedeagus (Fig. 80) strongly asymmetrical, with apicodorsal carinae that converge apically to apicomedian prominences; pygidium of female (Fig. 39) with broad dorsomedian concavity with long, broad scales and with small apicolateral prominences; mesocoxae widely separated by distance *ca.* 0.6 x width of one mesocoxa; sutural elytral interstriae (Fig. 18) with postscutellar patch of broad, pallid scales; inner marginal protibial prominence (Figs. 59) feebly developed; metatibia of male (Fig. 66) straight on inner margin.

*Description*.—

**Male.** *Length*: 2.08-2.48 mm ( $\bar{x}$  = 2.34, *n* = 10). *Width*: 1.32-1.44 mm ( $\bar{x}$  = 1.31, *n* = 10). *Head*: vertex with broad, rounded scales; eyes protruding, narrowly separated by distance *ca.* 0.4 x width of rostrum at base. *Rostrum*: stout, slightly curved distally; length 1.15-1.77 x pronotal length ( $\bar{x}$  = 1.28, *n* = 10); scales broad, dense; carinae obsolete; length of distal portion 24-36% of total rostral length ( $\bar{x}$  = 31, *n* = 10). *Prothorax*: pronotum flattened, with slight dorsolateral depressions and postocular prominences; with imbricated, rounded, pallid scales, slightly narrower, apically subtruncate, fulvoaeneous scales and narrower, fuscoaeneous scales; broad scales dense apically, in transverse middorsal fascia, and on pleuron. *Elytra*: interstriae nearly flat, with imbricated, whitish scales, pallid fulvescent to fuliginous scales, and dark, fuscous scales; dark scales dense medially on sutural interstriae, on basal portion of interstria 3, on short posteromedian section of interstria 2, and in diffuse posterolateral macula across interstriae 2-10; pallid scales dense in short to elongate fascicles around posterolateral macula, and in declivial fascia. *Abdomen*: sternum 5 *ca.* 1.0 x as long as sternum 4, broadly emarginate posteriorly, with dense, broad scales laterally, slightly concave and setose medially. *Legs*: profemur *ca.* 1.1 x wider than metafemur; protibial uncus stout, long, curved; metatibial mucro short, curved, oblique. *Genitalia*: endophallus unarmed.

**Female.** *Length*: 2.28-2.72 mm ( $\bar{x}$  = 2.44, *n* = 10). *Width*: 1.32-1.44 mm ( $\bar{x}$  = 1.36, *n* = 10). *Rostrum*: slender; length 0.93-1.34 x pronotal length ( $\bar{x}$  = 1.26, *n* = 10); length of distal portion 36-46% of total rostral length ( $\bar{x}$  = 40, *n* = 10). *Legs*: protibia with inner marginal tooth; metatibia without inner marginal tooth; metatibial mucro obsolete.

*Distribution*.— The concept of *A. xanthoxyli* adopted here is based on specimens identified by H. R. Burke after examining the type series from Texas. The 202 examined specimens (TAMU) are from the following localities. MEXICO. *Chiapas*: Las Margaritas. *Nuevo León*: 7.5 mi. S Monterrey. *San Luis Potosí*: Ciudad Valles. *Tamaulipas*: 22 mi. SE Ciudad Victoria; Tampico; Municipio San Carlos, Cerro del Oriente. UNITED STATES. *Texas*: Cameron



Co.: Brownsville; Palmito Battleground; 10 mi. E Rio Hondo; Sabal Palm Grove Sanctuary near Southmost. Hidalgo Co.: Bentsen Rio Grande State Park; Santa Ana Wildlife Refuge. Kleberg Co.: Kingsville. Nueces Co.: Corpus Christi. Refugio Co.: 8 mi. S Woodsboro. San Patricio Co.: 3 mi. E Mathis; 7 mi. N Sinton. Starr Co.

*Natural History.*— Specimens of *A. xanthoxyli* have been collected on *Zanthoxylum fagara*. Linell (1897: 49-50) stated that the types of *A. xanthoxyli* were found "living in the seeds" of this plant, and Burke and Gates (1974: 325-326) noted that specimens of *A. xanthoxyli* occur along with those of *A. leucostictus* at the same time on the same *Z. fagara* plants in Texas. Townsend (1903) indicated that both species develop in the fruit of *Z. fagara*, stating that "larvae and pupae of *A. leucostictus* have been taken from fruits of *Zanthoxylum* during May through August," whereas those of *A. xanthoxyli* "occur during June and July". Referring to both species, the same authors stated that larvae feed on the white, fleshy inner portion of the fruits, devouring the tissue until only a thin outer shell remains. Infested fruits remain on the tree. Pupation occurs in the larval feeding cavity and the adult emerges through a small round hole in the fruit. One weevil develops in each fruit.

Examined specimens were collected in all months of the year except May and August.

#### The *Anthonomus leucostictus* Species Group

*Recognition.*— Adults of *A. leucostictus*, the only species in this species group, are distinguished by the following combination of characters: Pronotum with narrow, fuscous scales, and scattered, broad, leucine scales arising from punctures; elytral integument broadly visible between scattered leucine scales and inconspicuous, narrow, pallid fuliginous scales (Figs. 19, 20); elytral interstriae slightly convex, 3rd slightly elevated at base; head slightly constricted behind protruding eyes (Figs. 19); pronotum emarginate anterodorsally and anteroventrally; mesocoxae widely separated; femora relatively slender, each with a long, slender, slightly curved, acute inner marginal tooth (Fig. 67); mesotibia with acute outer apical spine (Fig. 67).

#### *Anthonomus (Anthonomocyllus) leucostictus* Dietz Figs. 19, 20, 40, 67, 81

*Anthonomus (Anthonomocyllus) leucostictus* Dietz (1891: 193, pl. 5, figs. 7, 7a). *Holotype*: TEXAS, male [Tex.] [Type/ 1950] [W. G. Dietz/ Coll.] [Anthonomus/ leucostictus/ Dietz] (MCZC). Schenkling and Marshall 1934: 38. Burke 1971: 49 (= *A. albopictus*). Burke and Gates 1974: 325-326. O'Brien and Wibmer 1982: 108.

*Anthonomus albopictus* Champion 1903: 173. *Holotype*: MEXICO, female [Ventanas/ Durango, Höge.] [B.C.A. Col.IV.4./ Anthonomus/ albopictus, Champ.] [Holo-/ type] [Type] (BMNH). Schenkling and Marshall 1934: 55. Blackwelder 1947: 838.

*Recognition (Figs. 19, 20).*— This species is recognized by the characters listed for the *A. leucostictus* species group. The species is the sister group of the *A. caeruleisquamis* species group as indicated by the shared possession of the long, slender, acute femoral tooth (Fig. 67) and the acute, outer apical mesotibial spine (Fig. 67).

#### *Description.*—

**Male.** *Length*: 2.32-2.64 mm ( $\bar{x}$ = 2.45,  $n$ = 10). *Width*: 1.32-1.56 mm ( $\bar{x}$ = 1.42,  $n$ = 10). *Head*: vertex with large, leucine scales like those on lateral margins of frons between eyes and with narrow, pallid fuliginous scales; venter with broad, imbricated, white scales; eyes protruding.

narrowly separated by distance *ca.* 0.8 x width of rostrum at base. *Rostrum*: slender, nearly straight proximally, slightly curved distally; distal portion tricarinate; length 1.33-2.26 x ( $\bar{x}$  = 1.58,  $n$  = 10) total body length; length of distal portion 31-37% ( $\bar{x}$  = 35,  $n$  = 10) of total rostral length. *Prothorax*: slightly constricted subapically, without dorsolateral depressions; emarginate anterodorsally, with well-developed postocular lobes; densely punctate, interspaces narrow, broadly exposed; dorsum with scattered, apically rounded, pallid leucine scales and with inconspicuous, narrow, pallid fuliginous scales; lower portion of pleuron with imbricated leucine scales. *Elytra*: subparallel-sided in basal 1/2; interstriae slightly convex, 3rd slightly elevated at base; dark integument broadly visible between narrow, pallid fuliginous scales and scattered, broad, leucine scales or small fascicles of such scales; striae deep, narrow, punctures with setiform scales. *Abdomen*: sternum 5 *ca.* 0.9 x as long as sternum 4, not emarginate posteriorly, not concave, densely setose medially. *Legs*: profemur *ca.* 1.0 x as wide as metafemur, with a single, slender inner marginal tooth; protibia straight, inner margin slightly concave between broad median prominence and slender apical uncus; metatibia nearly straight, without inner marginal prominence, widened at apex; metatibial mucro small, slender. *Genitalia*: aedeagus (Fig. 81) symmetrical, narrowed to subtruncate apex; endophallus unarmed.

**Female.** *Length*: 2.36-2.80 mm ( $\bar{x}$  = 2.57,  $n$  = 10). *Width*: 1.30-1.58 mm ( $\bar{x}$  = 1.44,  $n$  = 10). *Head*: *Rostrum*: slender, length 1.58-1.81 x ( $\bar{x}$  = 1.67,  $n$  = 10) pronotal length; length of distal portion 43-55% ( $\bar{x}$  = 47,  $n$  = 10) of total rostral length. *Pygidium* (Fig. 40): with broad, slightly rounded, apicomedian prominence. *Abdomen*: sternum 5 with small apicomedian prominence. *Legs*: protibia with slight inner marginal prominence; metatibia without inner marginal tooth; metatibial mucro obsolete.

*Distribution*.—*Anthonomus leucostictus* is known to occur in southern and western Texas and in northeastern and north-central México. In addition to the holotype of *A. leucostictus* from an unspecified locality in Texas, and that of *A. albopictus* from the state of Durango, México, 284 specimens (CNCI, CWOB, RSAC, TAMU, USNM) from the following localities were examined. MEXICO. *Durango*: 24 mi. W La Ciudad. *Hidalgo*: Sabinas. *México*: Bejuco, Temascaltepec. *Nuevo León*: 15.3 mi. E China; 15 and 18 mi. N Linares; 7.5 mi. S Monterrey; east slope Cerro de la Silla, near Guadalupe. *San Luis Potosí*: Río Verde; Media Luna. *Tamaulipas*: Tampico; 2 mi. E Tula. UNITED STATES. Texas. Bee Co.: 7 mi. SE Beeville. Bexar Co.: San Antonio. Brewster Co.: Big Bend National Park. Brazos Co. Cameron Co.: 10 mi. W Boca Chica; Brownsville; 8 mi. E Brownsville; 10 mi. E Rio Hondo; Palmito Battle Ground; Sabal Palm Grove. Hidalgo Co.: 2 mi. S Linn; Santa Ana Wildlife Refuge. Jim Wells Co.: 7 mi. W Alice. Kleberg Co.: Kingsville. La Salle Co.: 12 mi. N Cotulla. Live Oak Co.: 5 mi. E George West. Nueces Co.: Corpus Christi; 2 mi. S Corpus Christi. Refugio Co.: 8 mi. S Woodsboro. San Patricio Co.: Lake Corpus Christi State Park; 4 mi. SW Mathis; 6, 7 and 8 mi. N Sinton; Welder Wildlife Refuge. Victoria Co.: 7 mi. S Victoria.

*Natural History*.—Burke and Gates (1974: 325-326) noted that specimens of *A. leucostictus* occur along with those of *A. xanthoxyli* at the same time on the same *Zanthoxylum fagara* plants in Texas.

#### The *Anthonomus caeruleisquamis* Species Group

The *A. caeruleisquamis* group was established by Champion (1903: 157, 174-175) for two Central American species, *A. caeruleisquamis* Champion, and *A. squamiger* Champion.

*Recognition* (Figs. 21-26).—The species in this group are distinguished by the following characters: Pronotum and elytra broad, smooth, without elevations, prominences or distinct subapical constriction; pronotal punctures each with a large scale that does not extend beyond edge of puncture or with a much narrower scales; elytral interstriae flat, 3rd not elevated at base; elytral

integument narrowly visible between dense vestiture of small, rounded, cinereous to caeruleous scales; femora and tibiae, except for distal portions, ferruginous to alizarine. They share the following characters with *A. leucostictus*: femora with a single long, slender, curved tooth (*cf.* Fig. 67); mesotibia with acute outer apical spine (*cf.* Fig. 67); head slightly constricted behind protruding eyes.

The group is a relatively homogeneous one and the following descriptions apply to all of the assigned species.

*Description.*—

**Male.** *Head*: vertex with small griseous to caeruleous scales; venter with densely imbricated white scales; eyes protruding. *Rostrum*: slender, more-or-less evenly curved from base to apex; proximal portion tricarinate, with sparse, slender scales; distal portion smooth, glabrous. *Prothorax*: broad at base, narrowed to shallow subapical constriction; each pronotal puncture with a broad scale that fills puncture but does not overlap interspace, or with a narrow, setiform scale; lower portion of pleuron with broader, white scales. *Elytra*: not vaulted medially, sides slightly widened in posterior 1/3; interstriae broad, flat, with dense, recumbent vestiture of small, rounded scales and median rows of smaller, narrower, scales; striae deep, narrow, with minute setiform scales; interstria 3 not prominent at base. *Abdomen*: sterna 3-5 shallowly, broadly concave medially, with dense, imbricated scales laterally, longer, setiform scales medially. *Legs*: femora ferruginous to alizarine in basal 3/4, piceous, like distal portions of tibiae and tarsi, in distal 1/4, with sparse, narrow scales that are replaced by broader caesious scales in distal 1/4; profemur with a single long, slender, slightly curved, acute inner marginal tooth.

**Female.** *Rostrum*: very slender; proximal portion smooth, shining, glabrous, except at extreme base; distal portion smooth, glabrous. *Pygidium*: with slight apicomedian marginal prominence; slightly excavated apicomediaally, excavation with broad scales. *Abdomen*: sterna 1-4 slightly, broadly concave, with dense, imbricated white scales laterally, admixed longer, suberect white scales and erect setiform scales medially.

**Key to Known Adult Males of the Species in the *A. caerulei-squamis* Group**

- |    |  |   |
|----|--|---|
| 1  | Procoxa with acute internal tooth; pygidium not excavated; metatibia slightly constricted subapically, not excavated posteriorly, without subapical, inner marginal prominence; rostrum without midventral, subapical tooth.....   |   |
|    | ..... <i>A. squamiger</i> , p. 580   |   |
| 1' | Procoxa without internal tooth; pygidium excavated (Figs. 27-28); metatibia excavated posteriorly in apical 1/4 between broad, rounded, outer apical and inner apical expansions or with large, bluntly rounded, subapical, inner marginal prominence (Figs. 68, 69); rostrum with midventral, subapical tooth (Fig. 25) ..... | 2 |
| 2  | Metatibia not excavated in apical 1/4, with large, bluntly rounded, subapical, inner marginal prominence (Fig. 69) .....   |   |
|    | ..... <i>A. caesius</i> , p. 583   |   |
| 2' | Metatibia excavated posteriorly in apical 1/4 between broad, rounded, outer apical and inner apical expansions, without subapical, inner marginal prominence (Fig. 68) .....   | 3 |
| 3  | Pygidium deeply excavated, with long, acuminate, aureous scales that are much longer and broader in two contiguous middorsal clusters and in smaller, extreme lateral clusters (Fig. 27) .....   |   |
|    | ..... <i>A. aeroides</i> , p. 581  |   |
| 3' | Pygidium less deeply excavated, with long, acuminate, aureous scales that are longest and broadest in large,   |   |

approximate, rounded dorsomedian clusters, without lateral clusters (Fig. 28).....*A. cymatilis*, p. 582

### Key to Known Adult Females of the Species in the *A. caeruleisquamis* Group

- 1 Abdominal sternum 5 without median fovea, depressed on each side of apicomedian carina (Fig. 50); protibia with obsolescent inner marginal prominence .....  
.....*A. squamiger*, p. 580
- 1' Abdominal sternum 5 with median fovea, without apicomedian carina (Figs. 51, 52); protibia with broad, low, inner marginal prominence .....2
- 2 Abdominal sternum 5 slightly produced apicomediaally (Fig. 51); broad scales on pronotum and elytra deep caeruleous .....  
.....*A. caeruleisquamis*, p. 581
- 2' Abdominal sternum 5 broadly emarginate apicomediaally (Fig. 52); broad scales on pronotum and elytra pallid caesius to cinereous .....*A. cymatilis*, p. 582

#### *Anthonomus (Anthonomocyllus) squamiger* Champion

Figs. 21, 22, 41, 50, 82, 83

*Anthonomus squamiger* Champion 1903: 174-175. *Holotype*. PANAMA: female [San Miguel/ Pearl Isl./ Champion.] [♀] [B.C.A. Col.IV.4./ *Anthonomus/ squamiger/ Champ.*] [Type] (BMNH). Schenkling and Marshall 1934: 55. Blackwelder 1947: 839. O'Brien and Wibmer 1982: 110.

*Recognition* (Figs. 21, 22).— Adults of this relatively small member of the *A. caeruleisquamis* subgroup are distinguished from the other members of the subgroup by the deep caeruleous color of the scales on the pronotum and elytra, by the unmodified pygidium and metatibia of the male, and by the small, acute internal tooth on the procoxa of the male.

#### *Description*.—

**Male.** *Length*: 2.20 mm (n= 1). *Width*: 1.24 mm (n= 1). *Head*: eyes separated by distance ca. 0.8 x width of rostrum at base. *Rostrum*: length 1.90 x (n= 1) pronotal length; length of distal portion 32% (n= 1) of total rostral length. *Prothorax*: broad scales deep caeruleous. *Elytra*: broad scales deep caeruleous. *Abdomen*: sternum 4 ca. 1.2 x longer in middle than sternum 5. *Legs*: profemur ca. 1.1 x wider than metafemur; protibia slender, slightly curved, without inner marginal prominence; metatibia nearly straight, slightly constricted subapically, with short, oblique apical uncus. *Genitalia* (Figs. 82, 83): aedeagus slender, slightly constricted subapically, expanded at extreme apex; endophallus unarmed.

**Female.** *Length*: 2.24-2.40 mm (n= 2). *Width*: 51-53 mm (n= 2). *Rostrum*: length 1.89-2.09 x (n= 2) pronotal length; length of distal portion 51-53% (n= 2) of total rostral length. *Pygidium* (Fig. 41): not depressed apicodorsally, with slight apicomedian projection. *Abdomen*: sternum 5 depressed on each side of apicomedian carina (Fig. 50). *Legs*: protibia slender, with obsolescent inner marginal prominence; metatibia nearly straight, widened slightly at apex, unarmed apically.

*Distribution*.— In addition to the male holotype from Panamá, two specimens from the following localities were examined. PANAMA. Panamá (Archipélago de las Perlas): Isla Taboga (1 male, TAMU). VENEZUELA. Táchira: La Quinta (1 female, AUEM).

*Natural History*.— Nothing is known about the life history and hosts of *A. squamiger*. Examined specimens were collected in March and June.

*Anthonomus (Anthonomocyllus) caeruleisquamis* Champion

Figs. 23, 24, 42, 51

*Anthonomus caeruleisquamis* Champion 1903: 174, Tab. X. figs. 12,12a, female). *Holotype*. GUATEMALA: [♀] [Sp. figured] [Mirandilla, / 1700 ft./ Champion.] [B.C.A. Col.IV.4./ *Anthonomus/ caeruleisquamis./* Champ.] [Type] (BMNH). Schenklng and Marshall 1934: 56. Blackwelder 1947: 838. O'Brien and Wibmer 1982: 106.

*Recognition (Figs. 23, 24).*—Champion (1903: 174) stated that *A. caeruleisquamis*, "one of the most remarkable forms of *Anthonomus* yet discovered", is "recognizable at a glance by the blue squamosity of the upper surface". The specimens examined also have distinctive ochreous scales on the mesepisternum, mesepimeron and metepisternum and the ochreous pads on the tarsi contrast sharply with the dark integument and griseous scales on the upper portions of the tarsi. The examined adults are also somewhat larger than those of the other species in the *A. caeruleisquamis* subgroup. Since the male of the species is unknown, the possibility that the specimens identified as *A. caeruleisquamis* are females of one of the other named species of the *A. caeruleisquamis* subgroup cannot be ruled out.

*Description.*—

*Male.* Unknown.

*Female.* *Length:* 3.20 mm (n = 2). *Width:* 1.66-1.72 mm (n = 2). *Head:* eyes small, separated by distance ca. 0.9 x width of rostrum at base. *Rostrum:* length 1.98-2.08 x (n = 2) pronotal length; length of distal portion 57-60% (n = 2) of total rostral length. *Prothorax:* broad scales deep caeruleous. *Elytra:* broad scales deep caeruleous in color. *Abdomen* (Fig. 51): sternum 5 rounded, not emarginate apicomediaally, with deep median fovea. *Legs:* profemur ca. 1.3 x wider than metafemur; protibia slender, with broad, low, inner marginal prominence; metatibia nearly straight, slightly widened at apex, unarmed apically.

*Distribution.*— In addition to the holotype of *A. caeruleisquamis* from the Department of Escuintla, Guatemala, a specimen labelled "On ship from GUATEMALA Phila. Pa." (1 female, USNM) was examined.

*Natural History.*— Nothing is known about the life history and hosts of *A. caeruleisquamis*. Examined specimens were collected in February and November.

*Anthonomus (Anthonomocyllus) aeroides*, new species

Figs. 25, 26, 27, 84, 85

*Type Series.*— *Holotype:* VENEZUELA, male [Venezuela - AR/ Rancho Grande/ 900 m 3-VI-1966/ J. & B. Bechyne] (IZAV). *Paratype:* COLOMBIA, male [COLOM. Magd., 3000'/ Campana, 25 Km. S./ Sta. Marta, IV-29-1973/ Howden & Campbell] (HAHC).

*Recognition (Figs. 25, 26).*— This species is distinguished from the other members of the *A. caeruleisquamis* subgroup by the male having a relatively large, deeply excavated pygidium with long, acuminate, aureous scales that are much longer and broader in two contiguous middorsal clusters and in smaller, lateral clusters (Fig. 27). The metatibia of the male, as in the related *A. cymatilis*, is excavated posteriorly in the apical 1/4 between broad, rounded, apical, inner and outer marginal expansions (*cf.* Fig. 68).

*Description.*—

*Male.* *Length:* 2.60 mm (n = 2). *Width:* 1.54-1.56 mm (n = 2). *Head:* eyes separated by distance ca. 0.7 x width of rostrum at base. *Rostrum:* length 1.56-1.59 x (n = 2) pronotal length; distal portion with midventral, subapical tooth; length of distal portion 34% (n = 2) of total rostral length. *Prothorax:* broad scales pallid caesius. *Elytra:* broad scales pallid caesius in color.



*Pygidium* (Fig. 27): deeply excavated; with long, acuminate, aureous scales that are much longer and broader in two contiguous middorsal clusters and in smaller, extreme lateral clusters. *Abdomen*: sternum 4 ca. 2.0 x longer in middle than sternum 5. *Legs*: profemur subequal in width to metafemur; protibia slender, slightly curved basally, straight distally, with slight inner marginal prominence; metatibia stout, straight, excavated posteriorly in apical 1/4 between broad, rounded, apical, outer and inner marginal expansions. *Genitalia* (Figs. 84, 85): aedeagus sinuate in lateral view, slightly expanded medially, narrowed to broadly subtruncate apex; endophallus with minute median sclerite.

**Female.** Unknown.

**Distribution.**— This species is known only from the specimens in the type series from the Department of Magdalena, Colombia, and from the State of Aragua, Venezuela.

**Natural History.**— Nothing is known about the life history and hosts of *A. aeroides*. Examined specimens were collected in April and June.

**Etymology.**— The specific epithet means "like the sky" in Latin. It refers to the scales on the upper portion of the prothorax and on the elytra which are the color of a lightly overcast sky.

*Anthonomus (Anthonomocyllus) cymatilis*, new species  
Figs. 28, 43, 52, 68, 86, 87

**Type Series.**— *Holotype*: BRAZIL, male [S. Roque SP/ 25-XII-71/ F. Lane Col.] (MCZC). *Paratypes*: BRAZIL, 1 male, 1 female [S. Roque SP/ 25-XII-71/ F. Lane Col.]; 1 female [Pouso Alegre/ M. Gerais - Brasil/ IX-962/ F. S. Pereira col.]; 1 male [BRAZIL: PARANA/ 5 Km E Foz do/ Iguacu: Jan. 27/ 83: E. G. Riley]; 1 male, 1 female [*P. Grossa*/ Pedreira/ G. chuva./ 9-44] [2039] [Colecção/ F. Justus Jor] [Dept<sup>o</sup> Zool/ UF-PARANA]; 1 female [MORUMBI/ São Paulo-Capital/ Dr. Nick. 22.10.44] [Gregorio Bondar/ Collection/ David Rockefeller/ Donor]; 1 female [MORUMBI/ São Paulo-Capital/ Dr. Nick. 24.9.44] [4991] [Gregorio Bondar/ Collection/ David Rockefeller/ Donor]. Total paratypes, 8 (AMNH, CWOB, DZUP, MZSP).

**Recognition.**— *A. cymatilis* is like *A. caesius* in having the metatibia of the male excavated in apical 1/4 (Fig. 69). The pygidium of the male of *A. cymatilis* has long, acuminate, aureous scales that are longest and broadest in large, approximate, rounded dorsomedian clusters (Fig. 28).

**Description.**—

**Male.** *Length*: 2.44-2.68 mm ( $\bar{x}$  = 2.58,  $n$  = 5). *Width*: 1.54-2.44 mm ( $\bar{x}$  = 1.76,  $n$  = 5). *Head*: eyes separated by distance ca. 0.7 x width of rostrum at base. *Rostrum*: length 1.53-1.77 x ( $\bar{x}$  = 1.62,  $n$  = 5) pronotal length; distal portion with median, midventral, subapical tooth; length of distal portion 31-34% ( $\bar{x}$  = 33,  $n$  = 5) of total rostral length. *Prothorax*: broad scales pallid caesius to cinereous. *Elytra*: broad scales pallid caesius to cinereous. *Pygidium* (Fig. 28): excavated, with long, acuminate, aureous scales that are longest and broadest in large, approximate, rounded dorsomedian clusters. *Abdomen*: sternum 4 ca. 2.0 x longer in middle than sternum 5. *Legs*: profemur subequal in width to metafemur; protibia slender, slightly curved basally, straight distally, with slight inner marginal prominence; metatibia stout, straight, excavated posteriorly in apical 1/4 between broad, rounded, outer apical and inner apical expansions (Fig. 68). *Genitalia* (Figs. 86, 87): aedeagus sinuate in lateral view, slightly expanded medially, constricted proximal to slight apicolateral expansions; struts expanded distally; endophallus with minute median sclerite.

**Female.** *Length*: 2.32-2.72 mm ( $n$  = 2). *Width*: 1.62-1.64 mm ( $n$  = 2). *Rostrum*: length 2.08-2.21 x ( $n$  = 2) pronotal length; length of distal portion 31-37% ( $n$  = 2) of total rostral length. *Abdomen*: sternum 5 with deep median fovea. *Legs*: protibia slender, with broad, low, inner marginal prominence; metatibia constricted subapically, widened slightly at apex; metatibial uncus obsolete, outer apical tooth present.

*Distribution*.— This species is known only from the type series from the States of Minas Gerais, Paraná and São Paulo, Brazil.

*Natural History*.— Nothing is known about the life history and hosts of *A. cymatilis*. Examined specimens were collected in January, September, November and December.

*Etymology*.— The specific epithet, a Latin adjective meaning blue, refers to the bluish color of the scales on the upper portion of the prothorax and on the elytra.

*Anthonomus (Anthonomocyllus) caesius*, new species

Figs. 29, 69, 88, 89

*Type Series*.— Holotype: BRAZIL, male [Chapada dos/ Guimarães/ 24-1-1961] [Brasil, MT/ J. & B. Bechyné] (MPEG).

*Recognition*.— *A. caesius* is distinguished from the other members of the *A. caeruleisquamis* subgroup that have the pygidium of the male excavated by not having the metatibia of the male excavated in apical 1/4, but armed with a large, bluntly rounded, subapical, inner marginal prominence (Fig. 69). The pygidium of the male (Fig. 29) has long, aureous scales that are longest and broadest in wide, approximate, dorsal bands and not forming such distinct middorsal clusters as in *A. cymatilis* (cf. Fig. 28).

*Description*.—

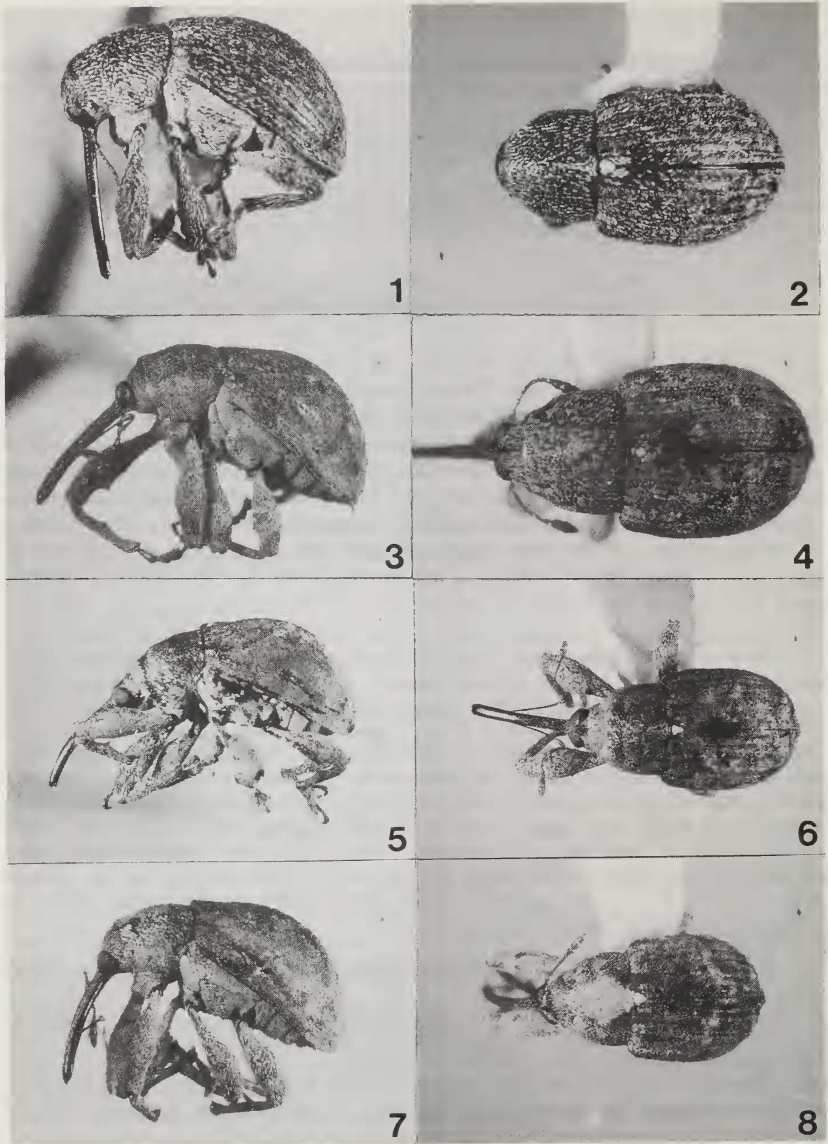
**Male.** *Length*: 2.32 mm (n= 1). *Width*: 1.60 mm (n= 1). *Head*: eyes separated by distance ca. 0.7 x width of rostrum at base. *Rostrum*: length 1.57 x (n= 1) pronotal length; distal portion with midventral, subapical tooth; length of distal portion 50% (n= 1) of total rostral length. *Prothorax*: broad scales pallid caesius. *Elytra*: broad scales pallid caesius in color. *Pygidium* (Fig. 29): excavated, with long, acuminate, aureous scales that are longest and broadest in wide, approximate, dorsal bands. *Abdomen*: sternum 4 ca. 2.0 x longer in middle than sternum 5. *Legs*: profemur subequal in width to metafemur; protibia slender, slightly curved basally, straight distally, with slight inner marginal prominence; metatibia stout, straight, with large, bluntly rounded, subapical, inner marginal prominence proximal to narrow, oblique, inner marginal channel (Fig. 69); metatibial uncus oblique, apically truncate. *Genitalia* (Figs. 88, 89): aedeagus sinuate in lateral view, slightly expanded medially then constricted proximal to slight apicolateral expansions; endophallus with minute median sclerite.

**Female.** Unknown.

*Distribution*.— This species is known only from the holotype from the State of Mato Grosso, Brazil.

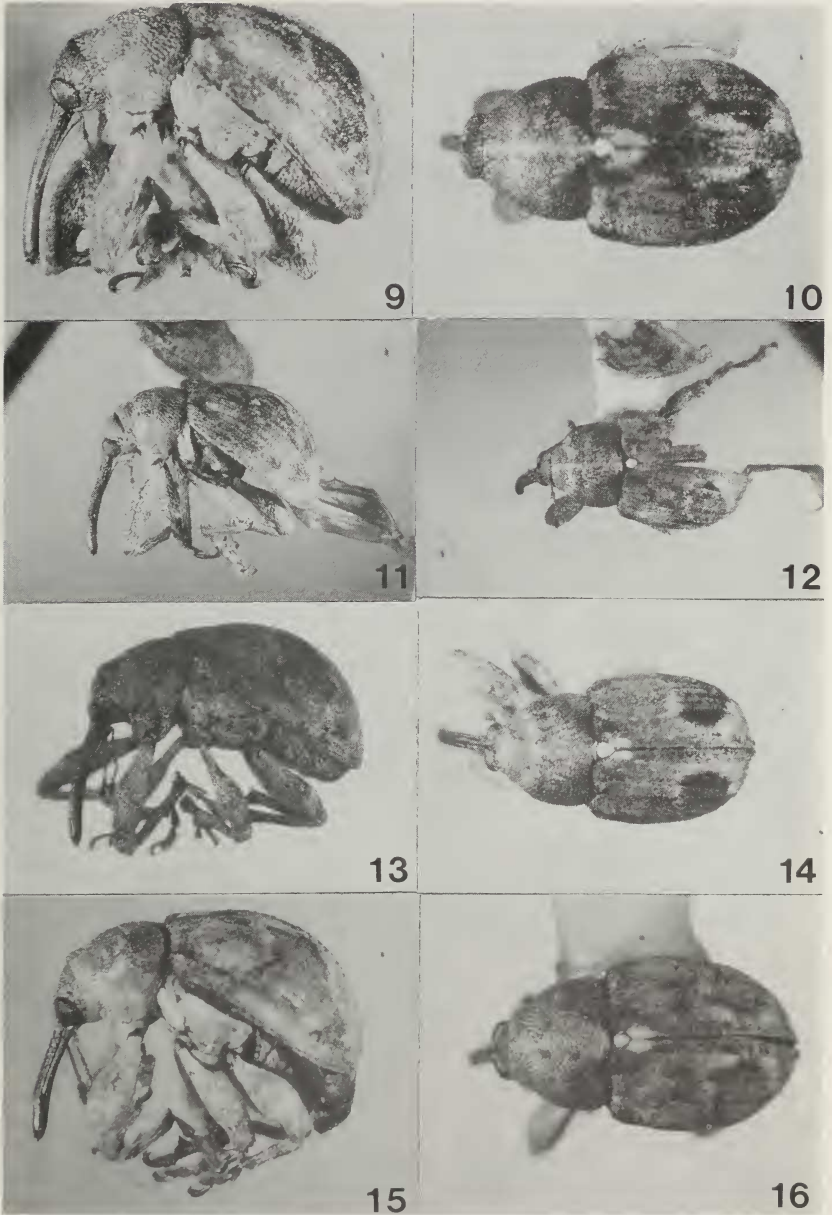
*Natural History*.— Nothing is known about the life history and hosts of *A. caesius*. The holotype was collected in January.

*Etymology*.— The specific epithet, a Latin adjective meaning bluish-gray, refers to the color of the scales on the upper portions of the prothorax and the elytra.

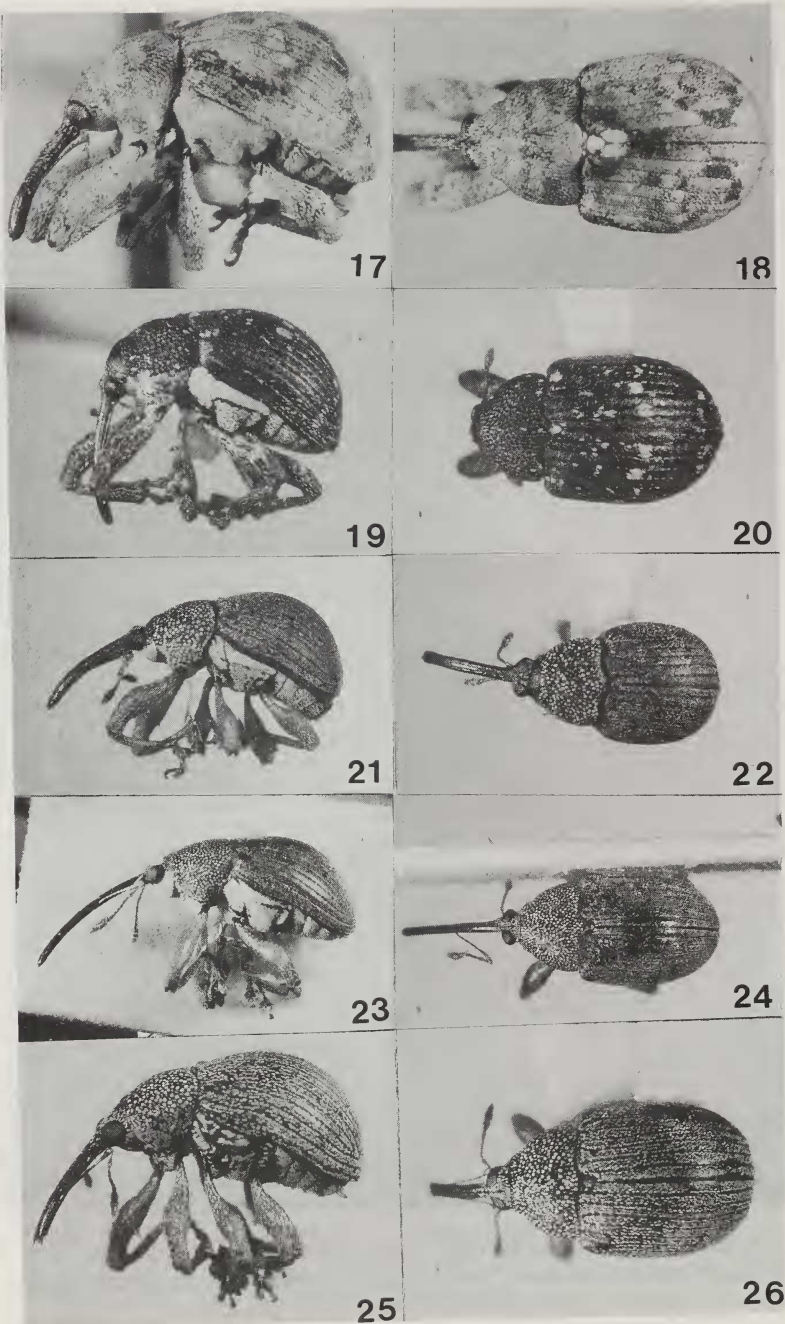


Figs. 1-8. Subgenus *Anthonomocyllus* spp., habitus of adults, lateral and dorsal views: 1, 2) *A. tenuirostris*, ♀, Puerta Parada, Guatemala; 3, 4) *A. acus*, ♂, Encruzilhada, Brazil; 5, 6) *A. accola*, ♀, El Limón, Venezuela; 7, 8) *A. argentatus*, ♂, Cayamas, Cuba.

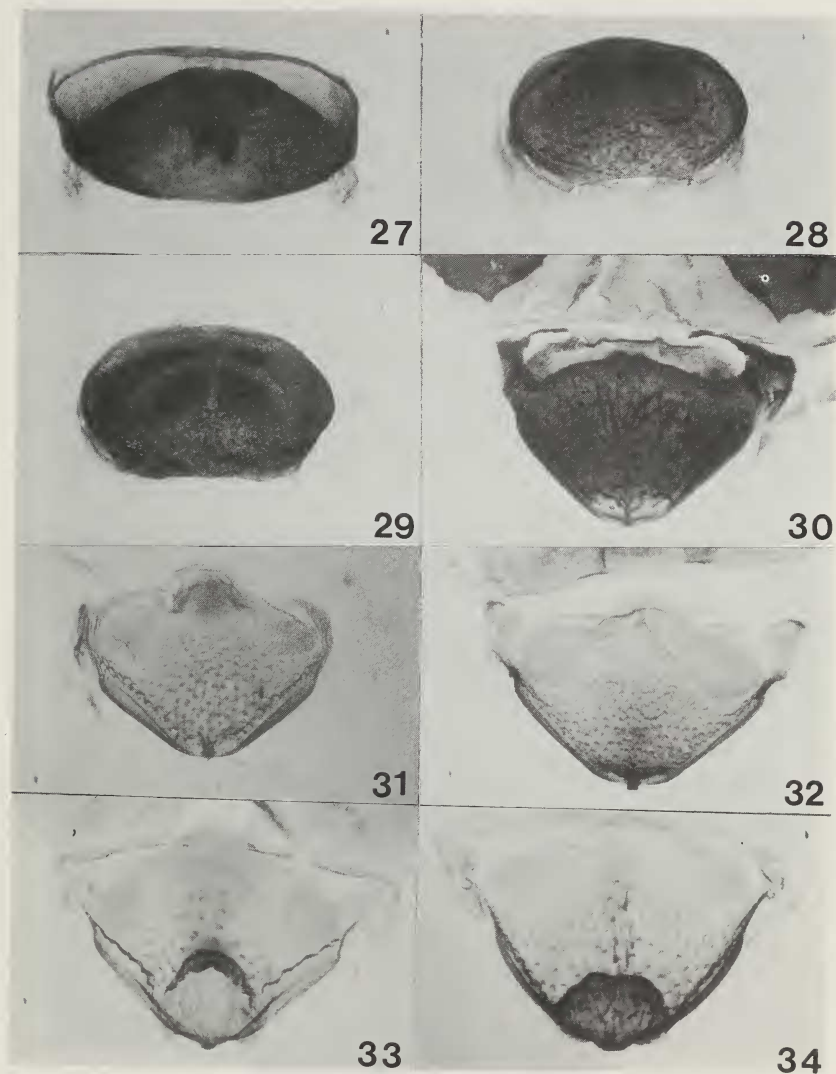




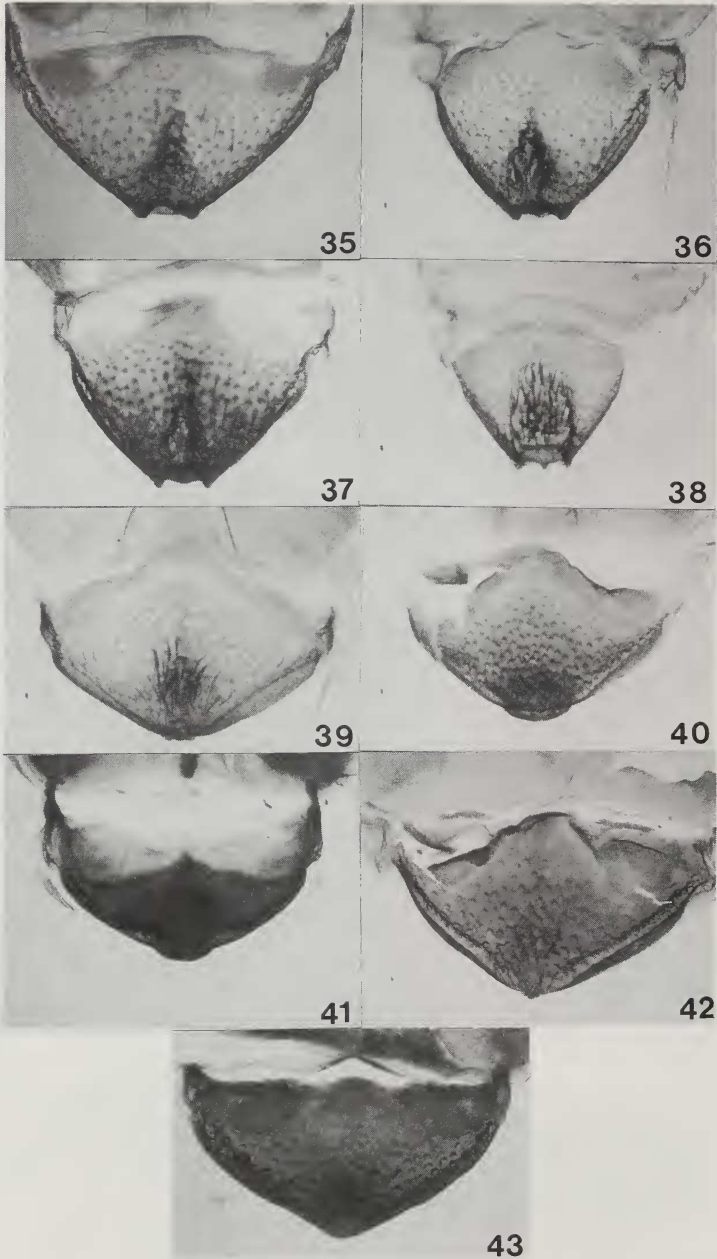
Figs. 9–16. Subgenus *Anthonomocyllus* spp., habitus of adults, lateral and dorsal views: 9, 10) *A. costulatus*, ♀, Matheson Hammock, Florida; 11, 12) *A. contaminatus*, ♂, holotype; 13, 14) *A. dentipes*, ♂, lectotype; 15, 16) *A. guanita*, ♂, holotype.



Figs. 17-26. Subgenus *Anthonomocyllus* spp., habitus of adults, lateral and dorsal views: 17, 18) *A. xanthoxyli*, ♂ Santa Ana Wildlife Refuge, Texas; 19, 20) *A. leucostictus*, ♀, Welder Wildlife Refuge, Texas; 21, 22) *A. squamiger*, ♂, 23, 24) *A. caeruleisquamis*, ♀ holotype; 25, 26) *A. aeroides*, ♂, Campana, Magdalena, Colombia.

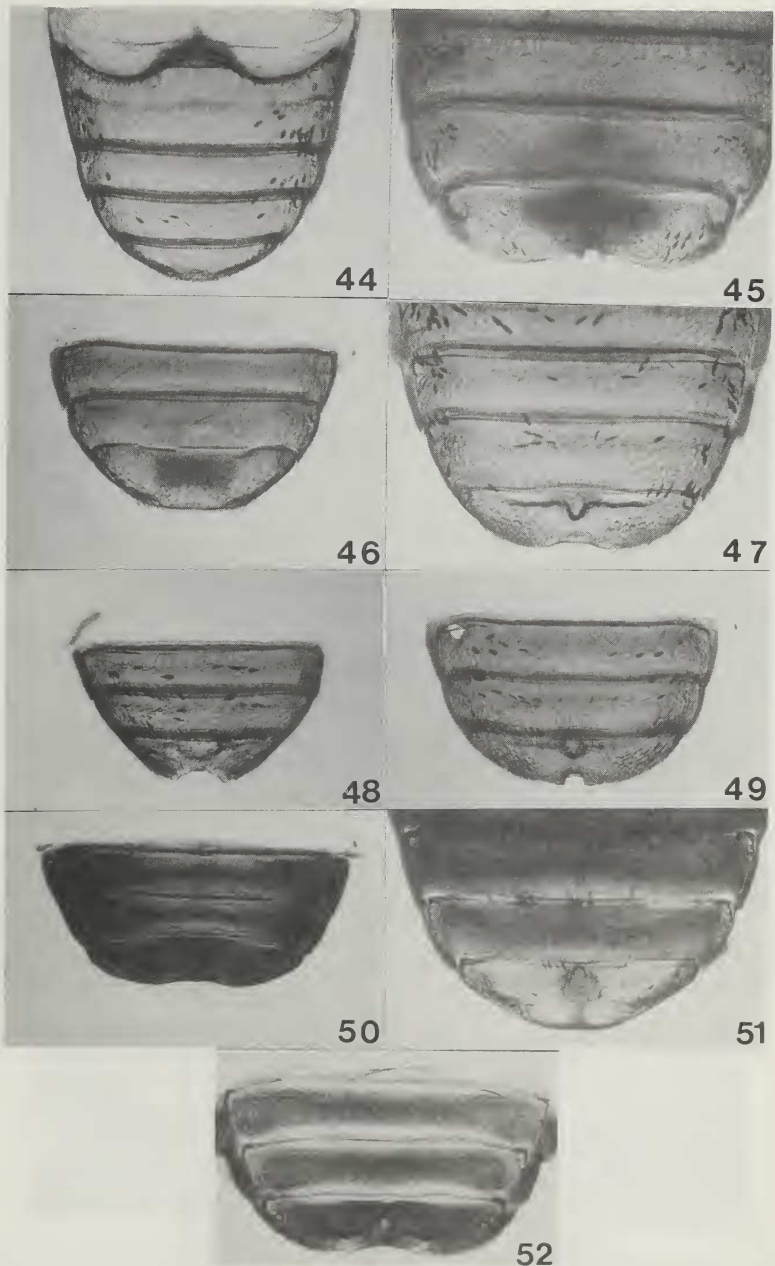


Figs. 27-34. Subgenus *Anthonomocyllus* spp., pygidium, dorsal view: 27) *A. aeroides*, ♂, Campana, Magdalena, Colombia; 28) *A. cymatilis*, ♂, holotype; 29) *A. caesius*, ♂, holotype; 30) *A. tenuirostris*, ♀, Puerta Parada, Guatemala; 31) *A. acus*, ♀, Encruzilhada, Brazil; 32) *A. accola*, ♀, El Limón, Venezuela; 33) *A. argentatus*, ♀, Boca Chica, Republica Dominicana; 34) *A. costulatus*, ♀, Matheson Hammock, Florida.

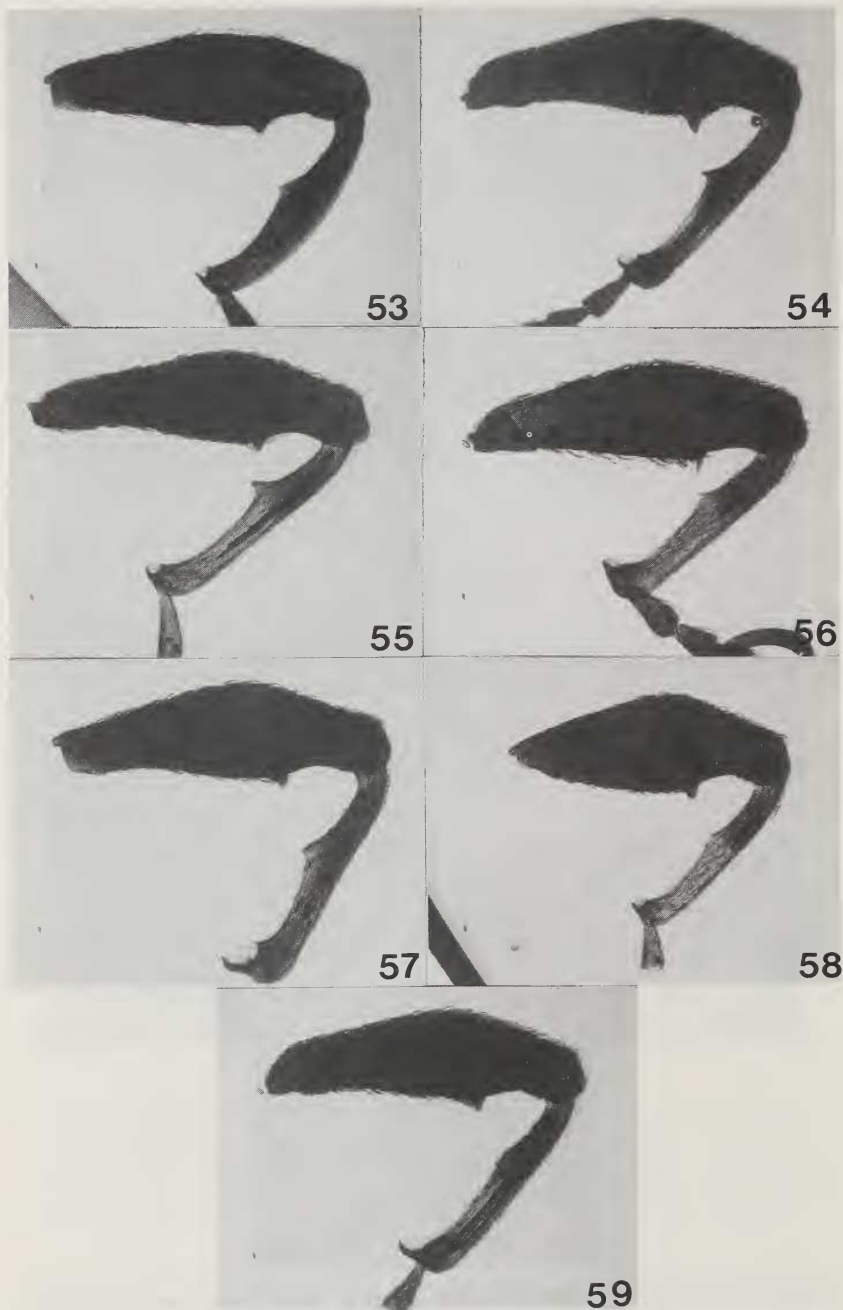


Figs. 35-43. Subgenus *Anthonomocyllus* spp., pygidium, dorsal view: 35) *A. azalus*, ♀, 2.4 mi. NE El Sauzal, México; 36) *A. contaminatus*, ♀, La Cruz de Taratara, Venezuela; 37) *A. dentipes*, ♀, Nova Teufônia, Brazil; 38) *A. guanita*, ♀, Anse la Boisse, Guadeloupe; 39) *A. xanthoxyli*, ♀, Santa Ana Wildlife Refuge, Texas; 40) *A. leucostictus*, ♀, Welder Wildlife Refuge, Texas; 41) *A. squamiger*, ♀, La Quinta, Táchira, Venezuela; 42) *A. caeruleisquamis*, ♀, Guatemala; 43) *A. cymatilis*, ♀, São Roque, São Paulo, Brazil.

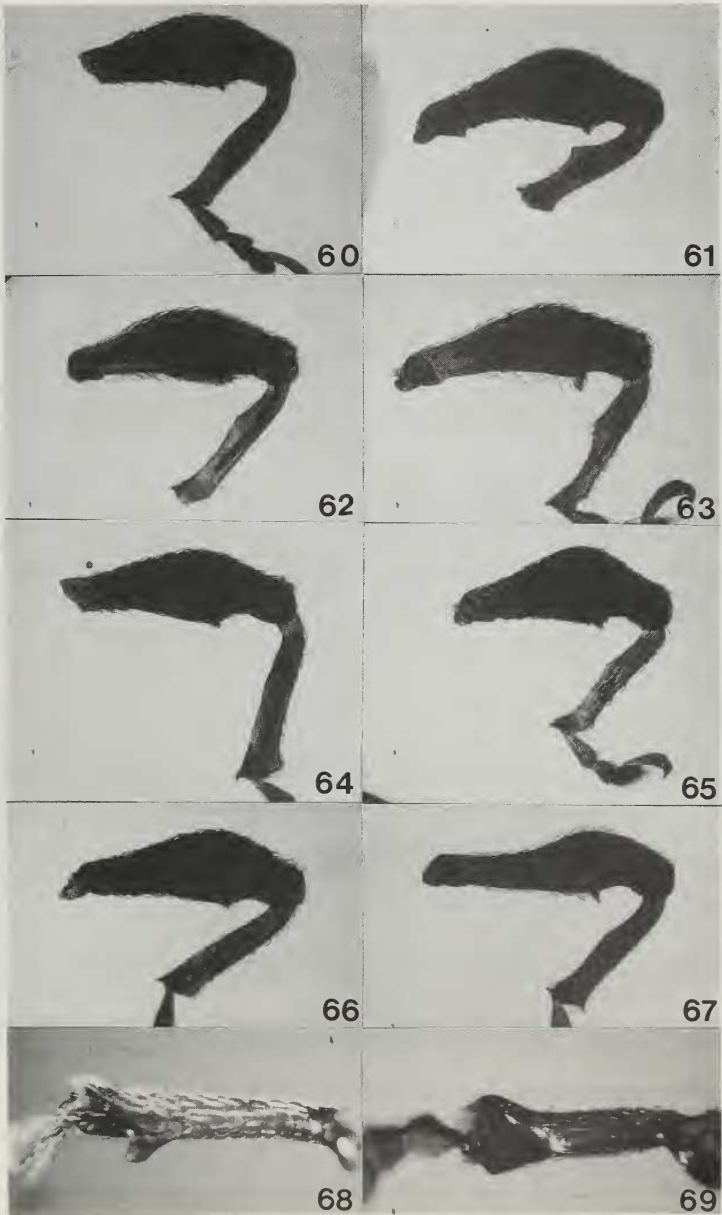




Figs. 44–52. Subgenus *Anthonomocyllus* spp., abdominal sternum of ♀, ventral view: 44) *A. acus*, Encruzilhada, Brazil; 45) *A. accola*, El Limón, Venezuela; 46) *A. argentatus*, Boca Chica, Republica Dominicana; 47) *A. azalus*, 2.4 mi.NE El Sauzal, México; 48) *A. guanita*, Anse la Boisse, Guadeloupe; 49) *A. xanthoxyli*, Santa Ana Wildlife Refuge, Texas; 50) *A. squamiger*, La Quinta, Táchira, Venezuela; 51) *A. caeruleisquamis*, Guatemala; 52) *A. cymatilis*, São Roque, São Paulo, Brazil.

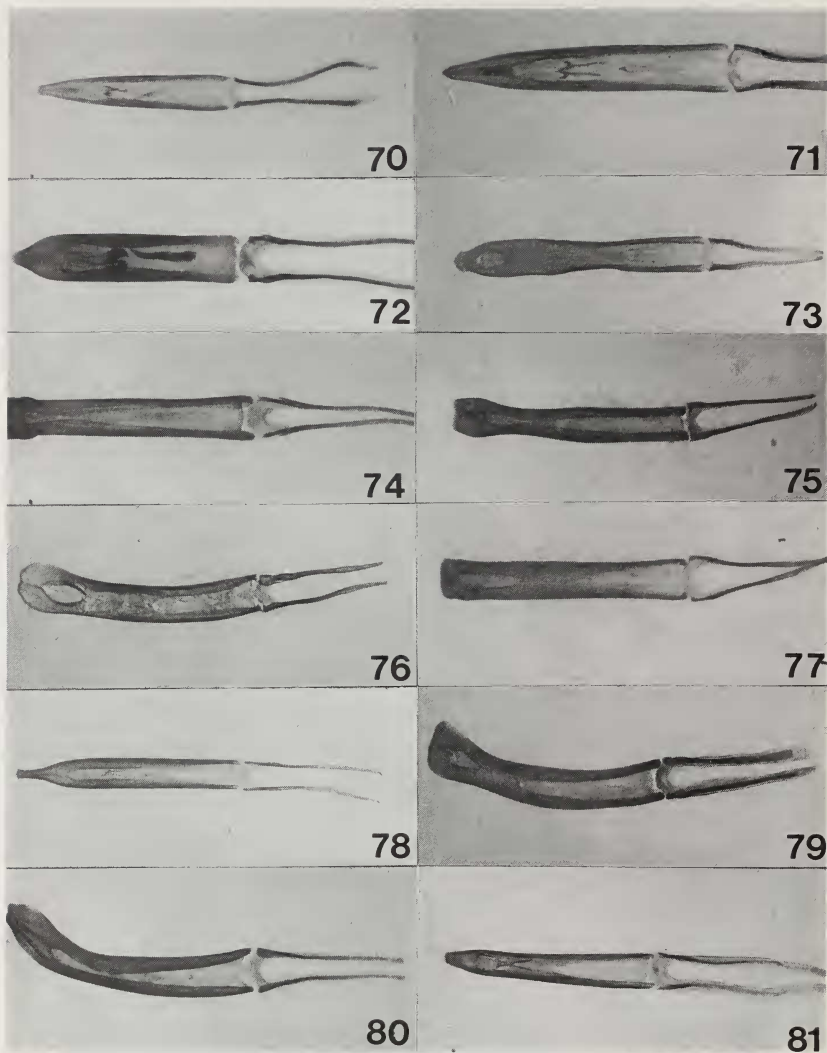


Figs. 53–59. Subgenus *Anthonomocyllus* spp., prothoracic legs, ♂, anterior view: 53) *A. tenuirostris*, Puerta Parada, Guatemala; 54) *A. accola*, holotype; 55) *A. argentatus*, Cayamas, Cuba; 56) *A. costulatus*, Matheson Hammock, Florida; 57) *A. dentipes*, Nova Teutônia, Brazil; 58) *A. guanita*, holotype; 59) *A. xanthoxyli*, Santa Ana Wildlife Refuge, Texas.



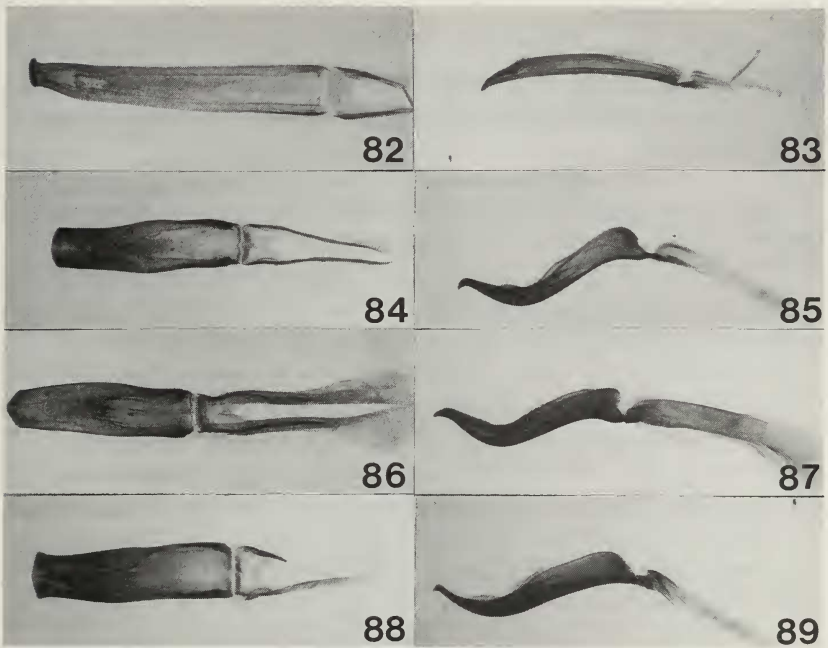
Figs. 60-67. Subgenus *Anthonomocyllus* spp., left metathoracic leg, anterior views: 60) *A. tenuirostris*, ♂, Puerta Parada, Guatemala; 61) *A. accola*, ♂ holotype; 62) *A. argentatus*, ♂, Cayamas, Cuba; 63) *A. costulatus*, ♂, Matheson Hammock, Florida; 64) *A. dentipes*, ♂, Nova Teutônia, Brazil; 65) *A. guanita*, ♂, holotype; 66) *A. xanthoxyli*, ♂, Santa Ana Wildlife Refuge, Texas; 67) *A. leucostictus*, ♀, Welder Wildlife Refuge, Texas.

Figs. 68-69. Subgenus *Anthonomocyllus* spp., left metatibia, ♂, ventral view: 68) *A. cymatilis*, holotype; 69) *A. caesius*, holotype.



Figs. 70-81. Subgenus *Anthonomocyllus* spp., ♂ genitalia, dorsal view: 70) *A. tenuirostris*, Puerta Parada, Guatemala; 71) *A. acus*, holotype; 72) *A. accola*, holotype; 73) *A. argentatus*, holotype; 74) *A. costulatus*, Matheson Hammock, Florida; 75) *A. azalus*, holotype; 76) *A. contaminatus*, holotype; 77) *A. dentipes*, holotype; 78) *A. guanita*, holotype; 79) *A. pazmani*, holotype; 80) *A. xanthoxyli*, Santa Ana Wildlife Refuge, Texas; 81) *A. leucostictus*, Welder Wildlife Refuge, Texas, dorsal view.





Figs. 82-89. Subgenus *Anthonomocyllus* spp., ♂ genitalia: 82) *A. aeroides*, Isla de Perlas, Panamá, dorsal view; 83) *A. aeroides*, Isla de Perlas, Panamá, lateral view; 84) *A. aeroides*, Campana, Magdalena, Colombia, dorsal view; 85) *A. aeroides*, Campana, Magdalena, Colombia, lateral view; 86) *A. cymatilis*, holotype, dorsal view; 87) *A. cymatilis*, holotype, lateral view; 88) *A. caesius*, holotype, dorsal view; 89) *A. caesius*, holotype, lateral view.

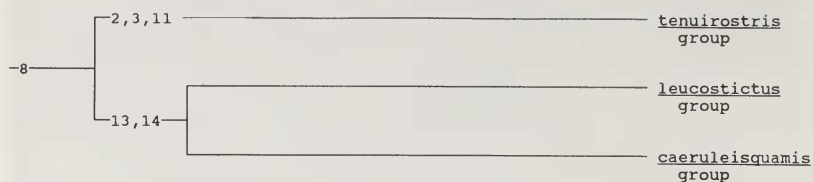


Fig. 90

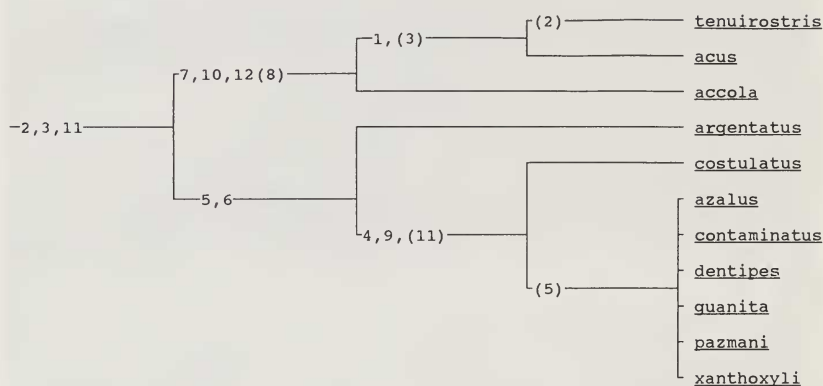


Fig. 91

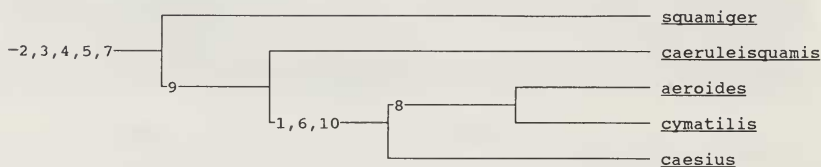


Fig. 92

Fig. 90. Phylogenetic tree depicting relationships of the species groups of the subgenus *Anthonomocyllus*.

Fig. 91. Phylogenetic tree depicting relationships of the species in the *A. tenuirostris* species group (homoplasious characters indicated by parentheses at assumed point of reversal).

Fig. 92. Phylogenetic tree depicting relationships of the species in the *A. tenuirostris* species group.

Table 1. Fourteen apomorphic characters and a matrix showing their distribution in eight of the species of *Anthonomus* in the subgenus *Anthonomocyllus*.

- 1) Rostrum of female (Fig. 1) slender, glabrous, straight.
- 2) Pronotum (Figs. 3-18) with large macula of imbricated, pallid scales on anterior and median portions of dorsum.
- 3) Pronotum flattened dorasally.
- 4) Pygidium of female (Figs. 34-39) with broad scales in middorsal concavity.
- 5) Pygidium of female (Figs. 33, 34) with broad apicodorsal excavation delimited by carina.
- 6) Pygidium of female (Figs. 33-39) with dorsal, apicolateral extensions.
- 7) Pygidium of female (Figs. 30-32) with short, apicodorsal, carinate prominence.
- 8) Mesocoxae separated by distance greater than 0.50 x width of one mesocoxa.
- 9) Sternum 5 of female abdomen (Figs. 47-49) with anteromedian fovea.
- 10) Sternum 5 of female abdomen (Figs. 44, 45) with posteromarginal "clasp" that receives apicomedian prominence of pygidium.
- 11) Protibia (Figs. 53-55) with slender, acute, median, inner marginal tooth.
- 12) Endophallus (Figs. 70-72) with 3 large sclerites.
- 13) Femoral tooth (Fig. 67) long, slender, slightly curved, acute.
- 14) Mesotibia (Fig. 67) with acute outer apical spine.

species	characters													
	0	0	0	0	0	0	0	0	1	1	1	1	1	1
	1	2	3	4	5	6	7	8	9	1	1	2	3	4
outgroup*	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>A. accola</i>	0	1	1	0	0	0	1	0	0	1	1	1	0	0
<i>A. acus</i>	1	1	0	0	0	0	1	0	0	1	1	1	0	0
<i>A. argentatus</i>	0	1	1	0	1	1	0	1	0	0	1	0	0	0
<i>A. azalus</i>	0	1	1	1	0	1	0	1	1	0	0	0	0	0
<i>A. caeruleisquamis</i>	0	0	0	0	0	0	0	1	0	0	0	0	1	1
<i>A. costulatus</i>	0	1	1	1	1	1	0	1	1	0	0	0	0	0
<i>A. leucostictus</i>	0	0	0	0	0	0	0	1	0	0	0	0	1	1
<i>A. tenuirostris</i>	1	0	0	0	0	0	1	0	0	1	1	1	0	0

0=character absent; 1=character present

Table 2. Ten apomorphic characters and a matrix showing their distribution in *A. leucostictus* and in the five species of *Anthonomus* in the *A. caeruleisquamis* species group.

- 1) Rostrum (Fig. 25) with midventral, subapical tooth.
- 2) Pronotum (Figs. 21, 23, 25) with subapical constriction obsolete.
- 3) Pronotal punctures each with a large scale that does not extend beyond edge of puncture or with a much narrower scale, separated by flat interspaces.
- 4) Elytral integument narrowly visible between dense vestiture of small, rounded, cinereous to caeruleous scales.
- 5) Elytral interstriae flat, 3rd not elevated at base.
- 6) Pygidium of male (Figs. 27-29) excavated, with long, acuminate, aureous scales that are long and dense in contiguous or approximate middorsal clusters.
- 7) Femora and tibiae, except for distal portions, ferruginous to alizarine.
- 8) Metatibia of male (Fig. 68) excavated posteriorly in apical 1/4 between broad, rounded, outer apical and inner apical expansions.
- 9) Abdominal sternum 5 of female (Fig. 51, 52) with median fovea.
- 10) Aedeagus (Figs. 85, 87, 89) sinuate in lateral view.

species	characters									
	0	0	0	0	0	0	0	0	0	1
	1	2	3	4	5	6	7	8	9	0
<i>A. leucostictus</i> *	0	0	0	0	0	0	0	0	0	0
<i>A. squamiger</i>	0	1	1	1	1	0	1	0	0	0
<i>A. caeruleisquamis</i>	0	1	1	1	1	9	1	9	1	9
<i>A. aeroides</i>	1	1	1	1	1	1	1	1	9	1
<i>A. caesius</i>	1	1	1	1	1	1	1	0	9	1
<i>A. cymatilis</i>	1	1	1	1	1	1	1	1	1	1

\* = outgroup; 0 = character absent; 1 = character present; 9 = unknown (male of *A. caeruleisquamis* unknown; females of *A. aeroides* and *A. caesius* unknown)

## PHYLOGENY

The "chaotic" classification of the Anthonominae was discussed recently in reference to attempts to identify the sister groups of the genus *Loncophorus* Chevrolat (Clark 1988d) and the *Anthonomus ornatus* species group (Clark and Burke 1989). Since the sister groups of these taxa were not found, it was necessary to identify apomorphic characters by survey of a wide array of anthonomines, including types of most New World species and specimens in other recently revised groups. This same survey served as the basis for discovery of unique characters in the subgenus *Anthonomocyllus*. These characters and

their distributions among the species in the subgenus are depicted in Tables 1 and 2. The data matrices presented in these tables were analyzed using the ALLTREES option of PAUP (Swofford 1985) to find the most parsimonious trees supported by the equally weighted characters. Analysis of the 14 characters in the 8 species listed in Table 1 produced four trees, one of which is depicted in two parts in Figures 91 and 92. This tree can be cited as justification for recognition of the *A. tenuirostris*, *A. leucostictus* and *A. caeruleisquamis* species groups. Monophyly of the *A. caeruleisquamis* subgroup was assumed prior to this analysis. Analysis of the ten characters of the 5 species in that group, listed in Table 2, produced one tree, depicted in Figure 93. This analysis also included *A. leucostictus*, which was designated as the outgroup because the previous analysis had shown the species to be the sister group of the *A. caeruleisquamis* subgroup.

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